Transport Report

COOGEE BEACH MASTER PLAN

PROJECT	Coogee Beach Master Plan			
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1	Issued	CAS	SCK	20/05/25

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1. INTRODUCTION

1.1 Master Plan Introduction

This Transport Report has been developed to provide background information and assess the outcomes of the Coogee Beach Land Use Master Plan (CBLUMP). The purpose of the CBLUMP has been to review and supersede the Coogee Bach Landscape Master Plan (CBLMP) in the context of a range of land use policy, transport planning and broader strategic planning changes over the past decade.

The CBLMP was adopted in 2014 and the City of Cockburn (CoC) has used it as a framework for the development of the recreational precinct between Port Coogee and the Coogee Beach Surf Life Saving Facility. It recommended various infrastructure upgrades and public realm improvements, and a staging plan for delivery.

The CoC nominated a number of key issues which has led to the review of the CBLMP, being:

- Uncertainty over ultimate access arrangements to Cockburn Road, with Main Roads WA (MRWA) in particular, being unsupportive of a dedicated access point to service the Caravan Park, as proposed by the existing Master Plan.
- The adoption of the City's Coastal Adaption Plan (2016) (currently being reviewed) and the Coogee Beach Foreshore Management Plan (2020) (FMP) which identify future coastal risks and management strategies. This includes new information on coastal hazards/risks and potential impacts on the reserve, including existing infrastructure such as car parking areas.
- The review of State Planning Policy 2.6 – Coastal Planning (SPP 2.6) and the associated guidelines.
- Functionality issues with the existing café building and an opportunity to redevelop the site to build new commercial premises in or around its existing location.
- A new lease has been signed with the Caravan Park operator which identified future limitations, requirements, and opportunities.
- Community demand for upgrades to Coogee Beach, particularly in relation to car parking, services, and the quality of existing infrastructure (MARKYT Community Scorecard Report 2022).

The study area of the CBLUMP is shown in Figure 1, noting that the reserve for Cockburn Road does not form part of the study area but is the key transport infrastructure corridor related to the site. The recommendations and area of the CBLMP is shown in Figure 2.

This version of the Report has been revised with minor alterations to the Report images to reflect the Project Study Area. No alterations to text or the details within the Report have been altered from the original version released for engagement processes in 2024. This version has since been supplemented by Technical Notes on modelling outcomes of the project.

Figure 1 Project study area (source: Metromap)

Figure 2 Adopted Coogee Beach Landscape Master Plan (source: CoC)

1.2 Project Objectives and Scope

The CoC set out a series of objectives which have guided the review, many of which are specific to the transport network (in **bold**), being:

- The intended role of Coogee Beach as a coastal node
- Coastal hazard risk and adaptation
- **Access to Cockburn Road**
- **Car parking demand**
- **Pedestrian access**
- **The expansion of the Coogee Beach Caravan Park and access arrangements**
- Redevelopment of the Coogee Beach Café and exploration of other complimentary commercial opportunities.

The scope, or focus of the transport assessment, has focussed on those four key objectives to provide the CoC and broader community with information relating to the existing and proposed transport network form to support the CBLUMP. Tasks specific to transport as set out in the brief from the CoC were:

- Identify access limitations, future trip generation to the Coogee Beach reserve, including from the Caravan Park, commercial land uses, beach/recreational visitors, and the Surf Lifesaving Club, to inform future traffic analysis and modelling.
- Determine likely future car parking demand for Coogee Beach reserve based on existing demand and recent surveys.
- Investigate through appropriate analysis and modelling and identify new access arrangements, including intersection treatments, with Cockburn Road that incorporate:

  a) Direct Access to the northern car park to accommodate high visitor demand to the shark barrier swimming area;

  b) Direct access to the southern car park for visitors to the Surf Lifesaving Club;

  c) A safe and convenient, and if possible, direct access arrangement for the Caravan Park (preferably at its northern end near existing reception facilities), and the provision of secondary access/improved emergency egress (preferably at the southern end via Poore Grove or a new four-way intersection with Amity Boulevard).

  d) Retention of existing access from Perlinte View to the northern car park; and

  e) Retention of existing access on the surrounding road network, including the Amity Boulevard and Beach Road intersections to Cockburn Road.

- Investigate and identify an internal vehicle access and movement network within the reserve that:

  a) Is safe and efficient

  b) Provides ease of access to recreational, community and commercial spaces;

  c) Improves visibility, internal wayfinding and universal access through the area;

  d) Maintains and/or enhances use of the cycle way network that runs through the area;

  e) Reduces conflict between Caravan Park vehicles and visitors to the reserve;

f) Maximises recreational spaces;

g) Protects the natural environment (in particular the remaining dunes and Tuart vegetation (a threatened ecological community);

h) Supports access for emergency vehicles.

- Investigate and identify a revised car parking layout, and associated management, that considers future demand, modifications to access arrangements, future development, the need for any coastal retreat, mode shift, and any other relevant matters. This project needs to review and define future access and parking arrangements for the reserve. Key considerations for this review include:
  - The future upgrade of Cockburn Road by MRWA and their desire to consolidate vehicle access points.
  - The existing Beach Road and Amity Boulevard intersections to Cockburn Road and their intended long-term use and treatment.
  - The existing Powell Road reserve, currently forming the access point to the northern part of the reserve, and whether it is to be retained.
  - Various site constraints, including high value environmental areas.
  - The northern car park being located within the coastal hazard risk area and portions may need to be retreated overtime to maintain adequate vegetated foredune width.
  - The potential use of the former railway reserve adjacent to Cockburn Road.
  - The popularity of the jetty and shark barrier swimming area and the demand on access and car parking at the northern end of the reserve.
  - The use of land on the eastern side of Cockburn Road for overflow parking and the constraints associated with that land, including uncertainty on its long-term use, land tenure (owned by MRWA and the WAPC), and existing heritage structures.
  - The Caravan Park's desire for a dedicated access point to reduce conflict between caravans and visitors to the reserve.
  - The Coogee Beach Surf Lifesaving Club's desire to improve visibility from Cockburn Road and seeking a more direct access point.
  - A preference for the cafe building to have easy access for service vehicles and exposure for customers.
  - Emergency access requirements for bushfire prone areas, including the Caravan Park.
- Investigate and identify a safe, efficient, and inclusive pedestrian network within and surrounding the reserve.

1.3 Transport Report

This Transport Report has been prepared taking into account the brief scope set out in the previous section as well as general guidance contained within relevant documents such as the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 2 – Planning schemes, structure plans and activity centre plans) and movement network assessment requirements within State Planning Policy 7.2 – Precinct Design. The structure of the report covers:

- Relevant background information and data
- Configuration of the existing network and issues / opportunities and constraints
- Cockburn Road alignment
- Parking Supply and Demands
- Pedestrian and Bike Riding Networks
- Public Transport
- Base Network Assessment.

For this version of the Transport Report, the future composition of the Master Plan is not contemplated given that technical assessment will occur in subsequent stages of the project.

2. BACKGROUND INFORMATION AND DATA

2.1 Introduction

This section sets out the fundamental background information and data that is available and will inform the development of the CBLUMP. This information has been extracted from a range of sources or has been collected to inform the development of this Transport Report. Much of this information has been summarised where required, or attached to this report as an appendix.

The overall study area is shown in the aerial image in Figure 3. The study area is elongated along the coast, with Cockburn Road being the dominant transport corridor. There is no rail infrastructure in the study area, with Cockburn Road largely being the dividing line between residential development to the east and the reserve areas associated with Coogee Beach to the west.

Figure 3 Aerial image of project area (source: Metromap)

The CoC online mapping tool was examined to understand the local street and path network extents. The mapping outputs are shown in Figure 4, with the path and street network defined. Formalised parking areas around the study area are also evident.

Figure 4 CoC mapping - road infrastructure (source: CoC)

Main Roads WA has a range of information within its Road Information Mapping System (RIMS), which includes a defined road hierarchy. This hierarchy, including the alignment of Cockburn Road as a State Network Road, is shown in Figure 5. This hierarchy also shows the extent of publicly gazetted roads. Within the study area, only a short section of Powell Road is a public road, with all other carriageways, including Poore Grove, being access ways into car parking rather than a formalised street.

Access to Cockburn Road for vehicular traffic is provided by the wider area distributor road network, with connections at Amity Boulevard and Orsino Boulevard being Local Distributors. Those streets are classified to cater for high volumes of traffic, bus routes and higher order intersection controls such as roundabouts and traffic signals.

Figure 5 Main Roads WA road hierarchy (source: Main Roads WA)

The reserve for Cockburn Road through the study area is shown in Figure 6 which sets out reserves from the Metropolitan Region Scheme (MRS). The Primary Regional Road reserve for Cockburn Road flanks the study area to the east, along with residual rail reserve land vested in the Public Transport Authority (PTA) which is a remnant of the historical rail network that extended south of Fremantle. There is no working rail infrastructure in the rail reserve. Within the Cockburn Road reserve, there is also a short western stub between the intersections of Amity Boulevard and Poore Grove that is a historical road alignment.

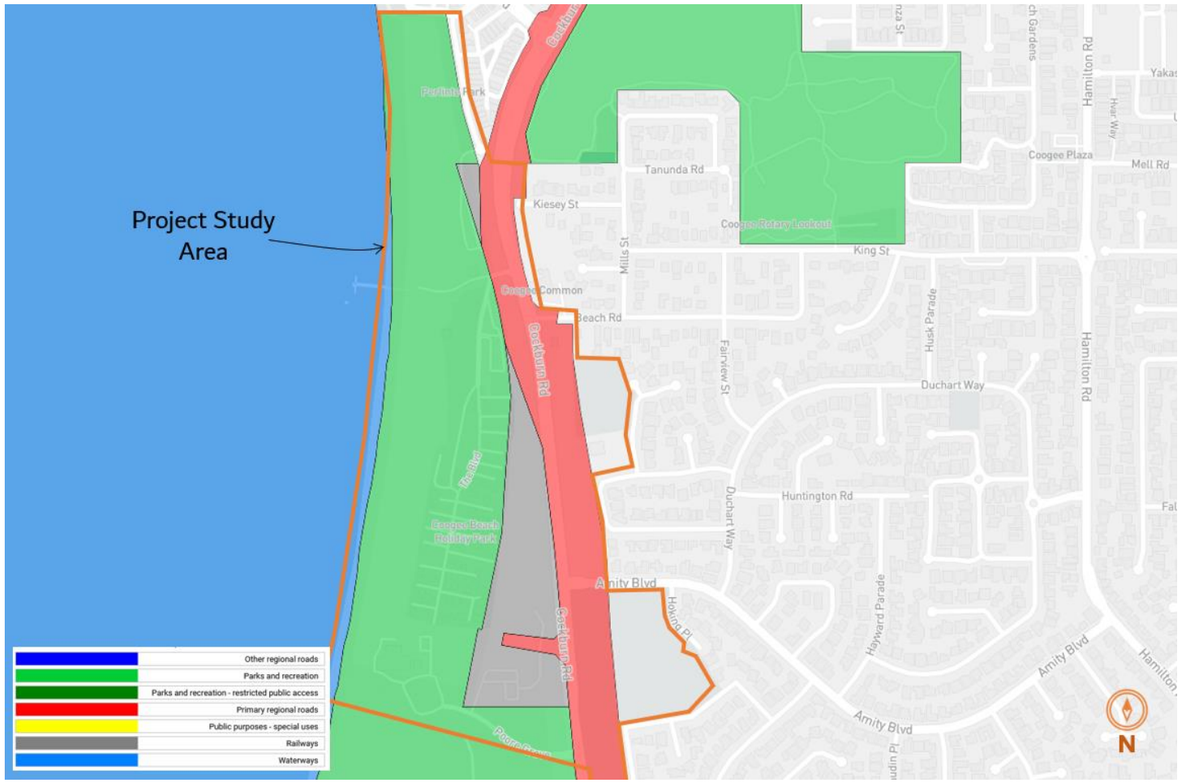


Figure 6 Metropolitan Regional Scheme reservations (source: Planwisely)

2.2 Local Streets

As set out, the only gazetted street within the study area is a section of Powell Road that extends to the west of Cockburn Road. This is one of three access points to the car parking areas and other facilities within the study area. The access points are shown in Figure 7. Powell Road is the most prominent which forms a T-intersection with Cockburn Road. There are turning pockets on both approaches to the intersection along Cockburn Road.

The Powell Road leg has a give way control with space for vehicle to turn left and right but with no marked lanes. There is no median on the Powell Road approach, no pedestrian priority and no other forms of traffic management.

The extent of the public road section of Powell Road (which is within the Primary Regional Road reservation area) within the study area is shown in Figure 8.

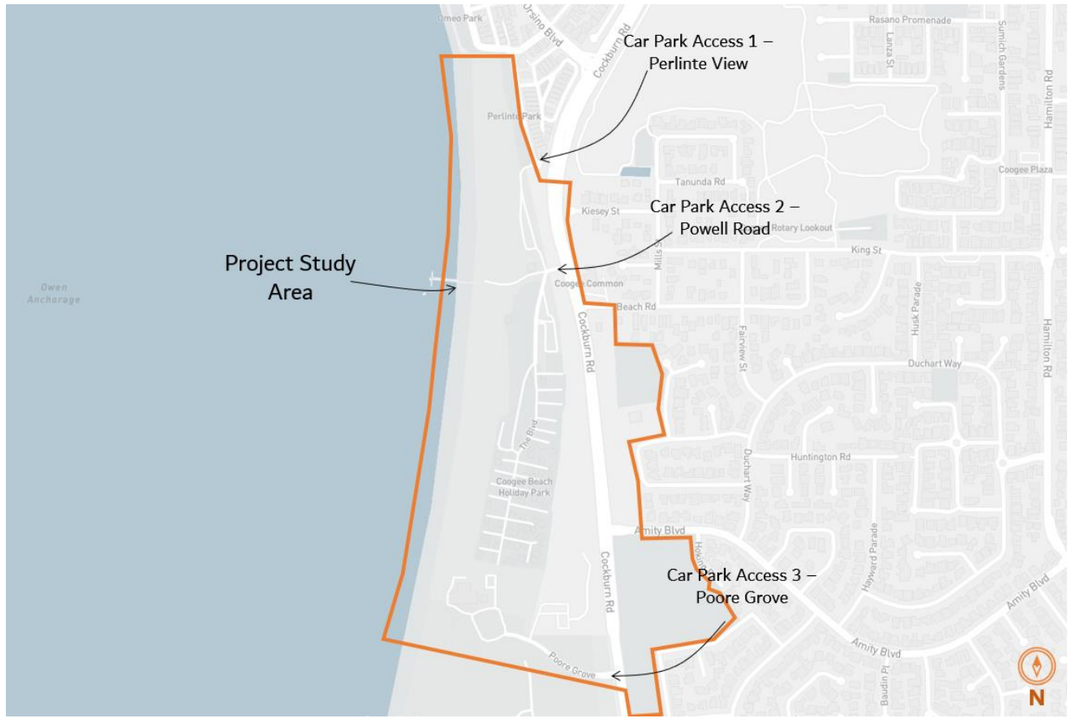


Figure 7 Access points to study area (source: Planwisely)

Figure 8 Section of Powell Road that is a public road (source: Metromap)

Adjacent to the site, Perlinte View is a local access street which connects North Coogee with the car parking area at the northern end of the master plan area. An example cross section of the street is shown in Figure 9. It has a carriageway width of approximately 6m, with parallel parking embayed on both sides of the carriageway allowing for 41 vehicles to park.

There are residential properties fronting on the eastern side (ranging from terrace type housing through to higher density multiple dwelling apartment development) with park areas on the western side. There are no traffic management control or devices on Perlinte View. There is a footpath on the eastern verge of the reserve and a shared path running through the open space area on the western side of the reserve.

Figure 9 Example cross section of Perlinte View (source: Flyt)

At the southern end of the study area, Poore Grove is a dedicated accessway which provides for vehicles to turn into the area off Cockburn Road in protected turning pockets. Poore Grove extends through to three separate car parking areas and allows for service vehicle access to the surf club and associated food and beverage outlets. Poore Grove has a sealed carriageway of approximately 6.4m wide with no kerbs or footpaths on either side. Both sides of the access way are fenced to reduce incursion in to the adjoining bush areas.

There is a marked pedestrian crossing nearing the approach to the main car park area at the beach and a range of signed restrictions are in placed relating to parking / stopping along Poore Grove. An example cross section of the access way is shown in Figure 10.

Figure 10 Example cross section Poore Grove (source: Flyt)

2.3 Count Data

There is a range of publicly available information that can be accessed for data related to the transport network. This includes the Main Roads WA TrafficMap site which has bicycle count data, video recorded surveys, traffic counts and data from all signalised intersections in the Metropolitan region. The available sources near or adjacent to the study area are shown in Figure 11. These sources are:

- Bicycle counts along the Perlinte View shared path
- Traffic signal (SCATS) data at the intersection of Cockburn Road and Orsino Boulevard
- Classified counts along Cockburn Road north of Orsino Boulevard and south of Poore Grove.

This count information was from a range of dates but was utilised within the technical assessment completed for this report.

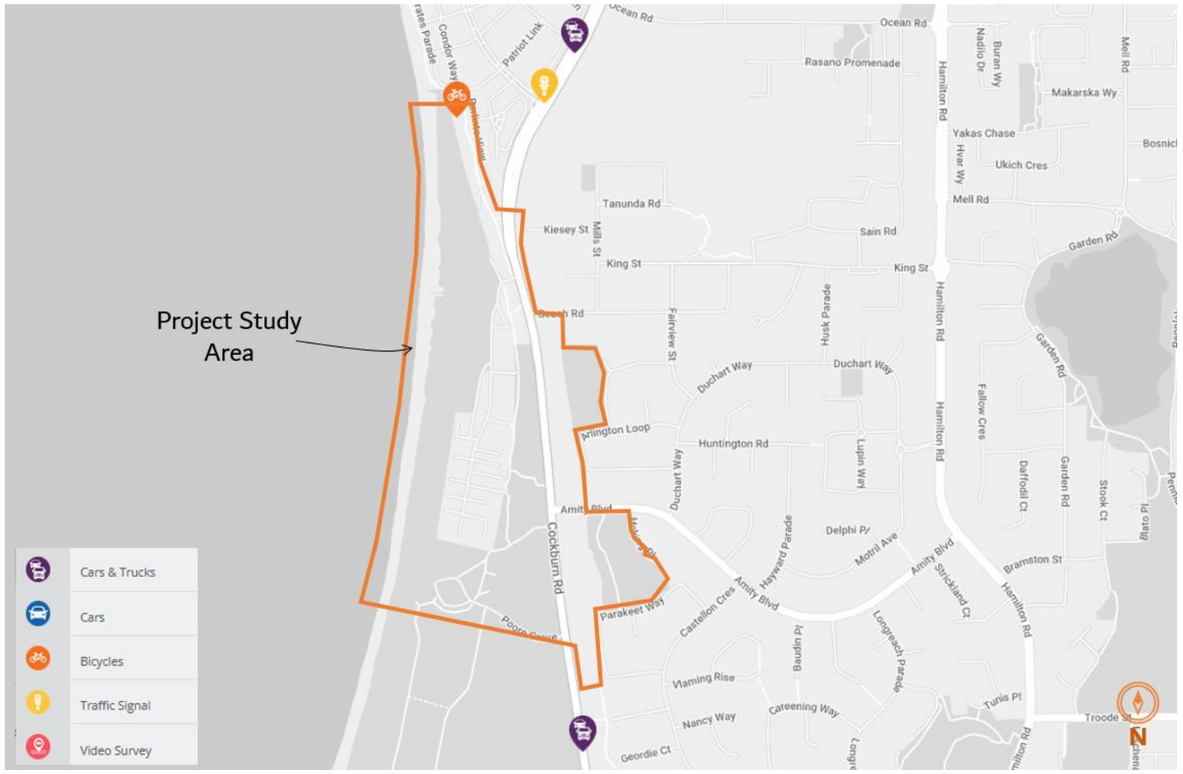


Figure 11 Traffic Map available count data (source: Main Roads WA)

In addition to the information on traffic counts that is available from Main Roads WA, the CoC have a database of count information used for asset management or specific to projects such as the CBLMP. This information is also available publicly through the Cockburn Mapping interface.

The count locations around the study area are shown in Figure 12. This information focuses on traffic count details and is spread out over a number of years (ranging from 2018 to 2023). This data was provided separately by the CoC to the project team for use in the technical assessment within this report. Information collected by the CoC for Powell Road, Perlinte View and Poore Grove in 2023 was also used for the assessment.

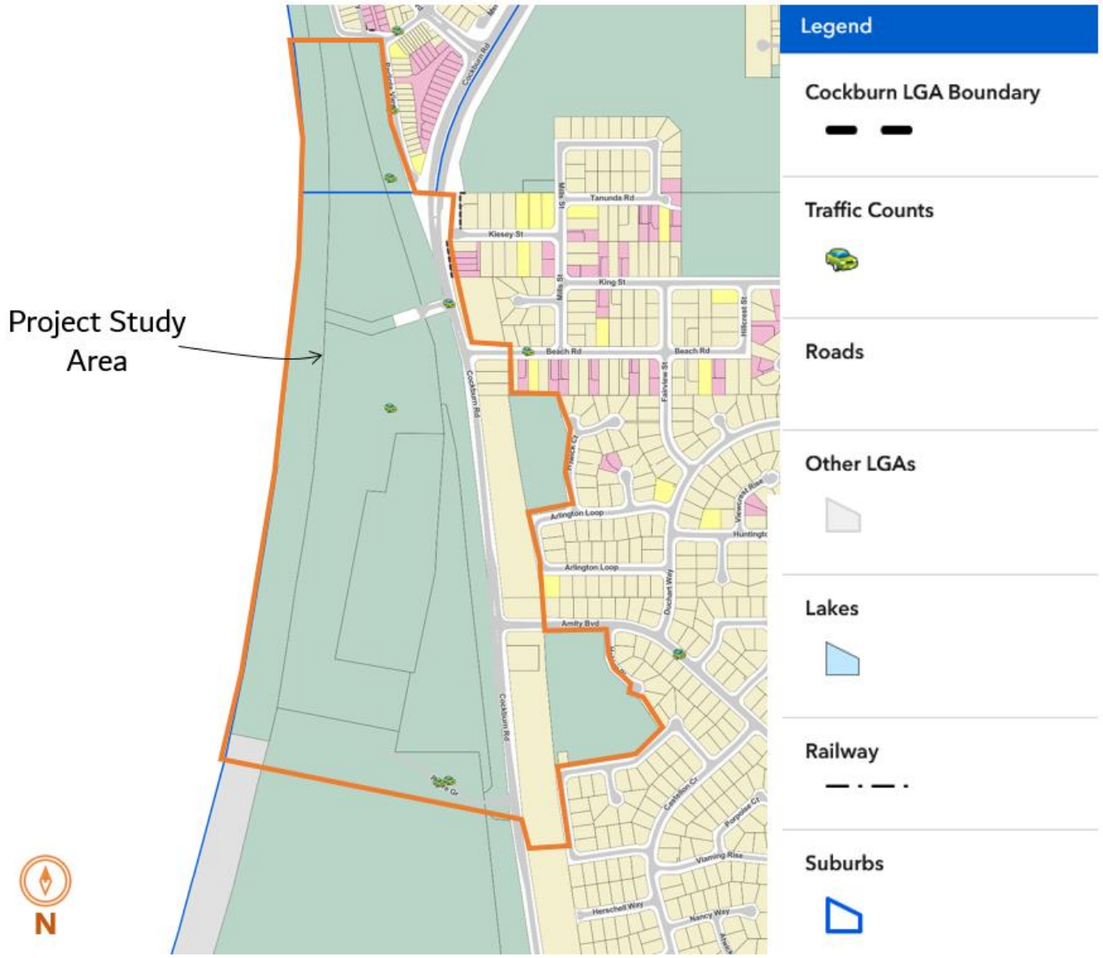


Figure 12 City of Cockburn count information (source: CoC)

2.4 CBRMP Transport Assessment

The CoC engaged Porter to undertake a review and assessment of the CBRMP in April 2020. That review included a range of data, including use of some of the count information collected by the CoC described in the previous section. The scope of that report was set out in the report as being:

"*The City of Cockburn has requested that preliminary investigations for the potential provision of a new access to Cockburn Road be investigated. The intent of this assessment is to analyse the existing situation and a future scenario incorporating a future access to Cockburn Road as outlined in the City's Master Planning. This study forms the basis for future work and analysis to be undertaken as the Master Planning progresses*".

Count information was collected for three intersections along Cockburn Road on a Friday – Powell Road, Beach Road and Amity Boulevard. Information for all three intersections was collected and processed in 15 minute increments for the time periods 7.00am – 9.00am and 3.00pm to 5.00pm. An example of output is shown in Figure 13.

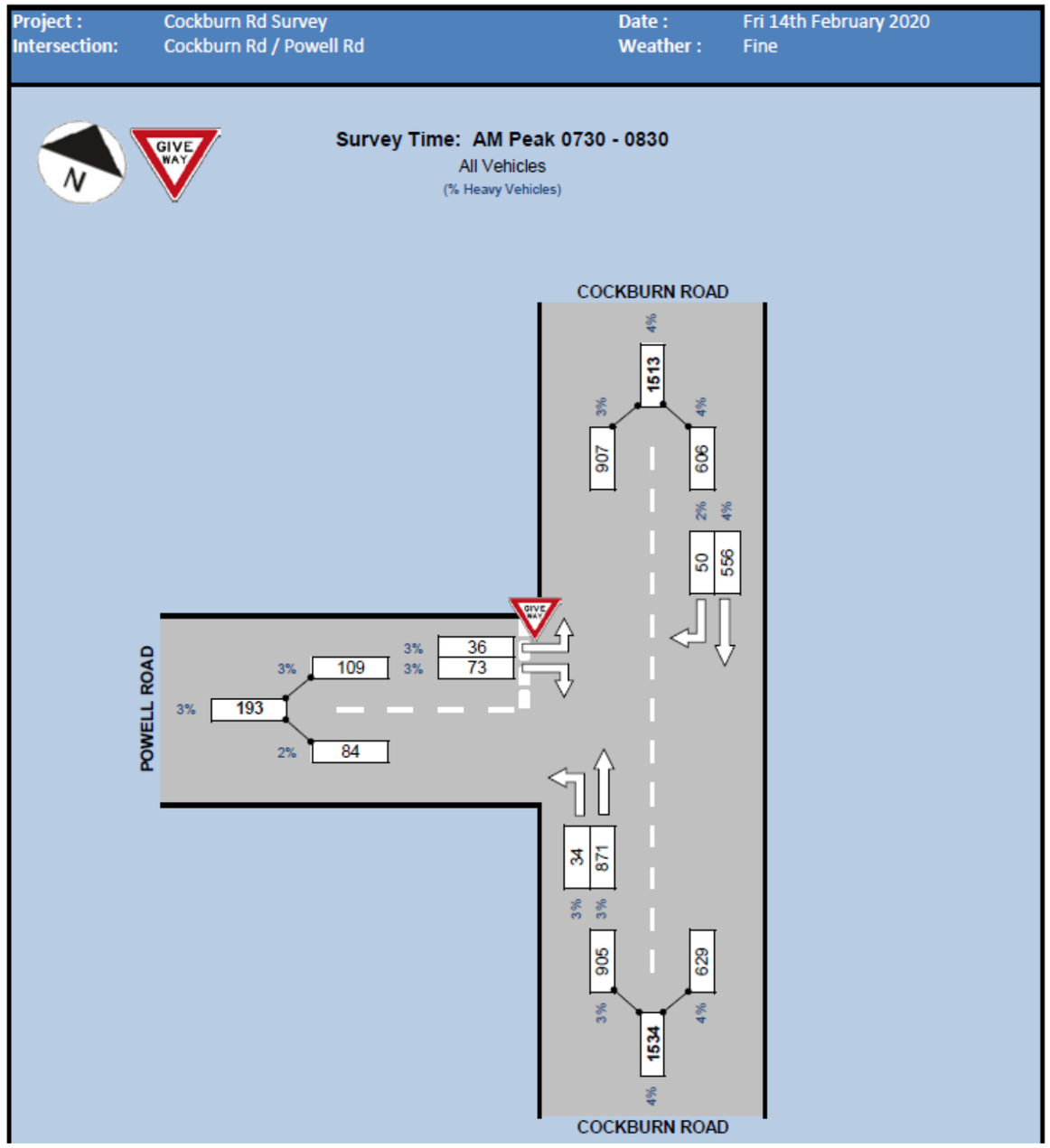


Figure 13 Example of traffic count information collected for CBRMP (source: Surveytech)

2.5 Site Observations

To directly inform the outcomes of this assessment, site observations were undertaken in January 2024 to understand the impacts of different travel patterns seen within the peak school holiday periods. This time of the year typically differs from periods when schools are typically in as there is a higher level of discretionary or leisure based travel, but less commuting and school trip traffic on the network.

Site observations were completed for both traffic volumes and parking occupancy to validate or compare other data sources. Traffic count sample information was collected for 30 minute periods at intersections on Cockburn Road at Powell Road, Beach Street and Poore Grove for peak periods on a Thursday, Friday, Saturday and Sunday (morning only to capture beach related movements). This information was then used within the technical assessment completed for the existing network.

To understand the seasonal variations of traffic movements, a comparison was undertaken between the volumes collected in January 2024 with those available from the SCATS data at the intersection of Orsino Boulevard and Cockburn Road from June 2023. This data was analysed for northbound and southbound movements, with the results set out in Table 1 and Table 2. As can be seen, there was a consistently higher recorded volume during the January 2024 observations compared to the June 2023 SCATS data. Most noticeable are differences in Saturday morning volumes when beach visitation is at its peak.

Table 1 Comparison northbound sample counts (2024) and volumes at Orsino Boulevard (2023)

	3.30pm Thurs	8.30am Fri	8.00am Sat	3.00pm Sat	Noon Sun
Sample Counts (January 2024)	365	434	275	280	443
Orsino Signals (2023 June)	341	381	134	195	320
Difference (2024 to 2023)	107%	114%	205%	144%	138%

Table 2 Comparison southbound sample counts (2024) and volumes at Orsino Boulevard (2023)

	3.30pm Thurs	8.30am Fri	8.00am Sat	3.00pm Sat	Noon Sun
Sample Counts (January 2024)	388	368	232	340	336
Orsino Signals (2023 June)	343	239	81	222	243
Difference (2024 to 2023)	113%	154%	286%	153%	138%

In addition to comparing the count samples and SCATS data, a comparison was completed against the 2020 counts completed for the CBRMP. Given the relatively limited nature of the data collection from 2020, only one time period (8.30am on Friday) was readily comparable. This comparison showed virtually identical flows for the northbound (436 in 2020 vs 434 in 2024) and higher movements in 2024 than 2023 for southbound (319 in 2020 and 368 in 2024).

This analysis of the available count data showed that the background traffic numbers taken from SCATS data and traffic count data on the network needs to be factored to ensure that it is reflecting the seasonal variations in flows directly resulting from beach related traffic generation.

2.6 Bicyclist Data

Some information relating to bicyclist or pedestrian movements is available through the project area. Despite pedestrians being the end user group of the facilities within the reserve, very little information has been collected or analysed as part of planning for the area. For instance, within the 2020 CBRMP, there was no data or analysis of pedestrian movements and no mention at all of bicyclists or cycling.

The publicly available count data through the Main Roads WA TrafficMap does include a site at Perlinte View which is designed to capture north-south movements along the shared path. The monthly trends for the site are shown in Figure 14 with the period from October 2022 to February 2023 broken down into daily counts in Figure 15. These charts show clear uplifts in usage through warmer, summer periods during school holidays. Daily counts on weekend holiday days are clear peaks in Figure 15.

These counts only relate to the shared path on Perlinte View rather than the carriageway itself. This was evident during observations, with many bicyclists choosing to use Perlinte View or the car park area to traverse the reserve and therefore would not be counted in this data set. Examples of bicyclists not using the shared paths are shown from January 2024 in Figure 16. From observations, there are clearly more bicyclists and e-mobility users in the area than data sources would suggest.

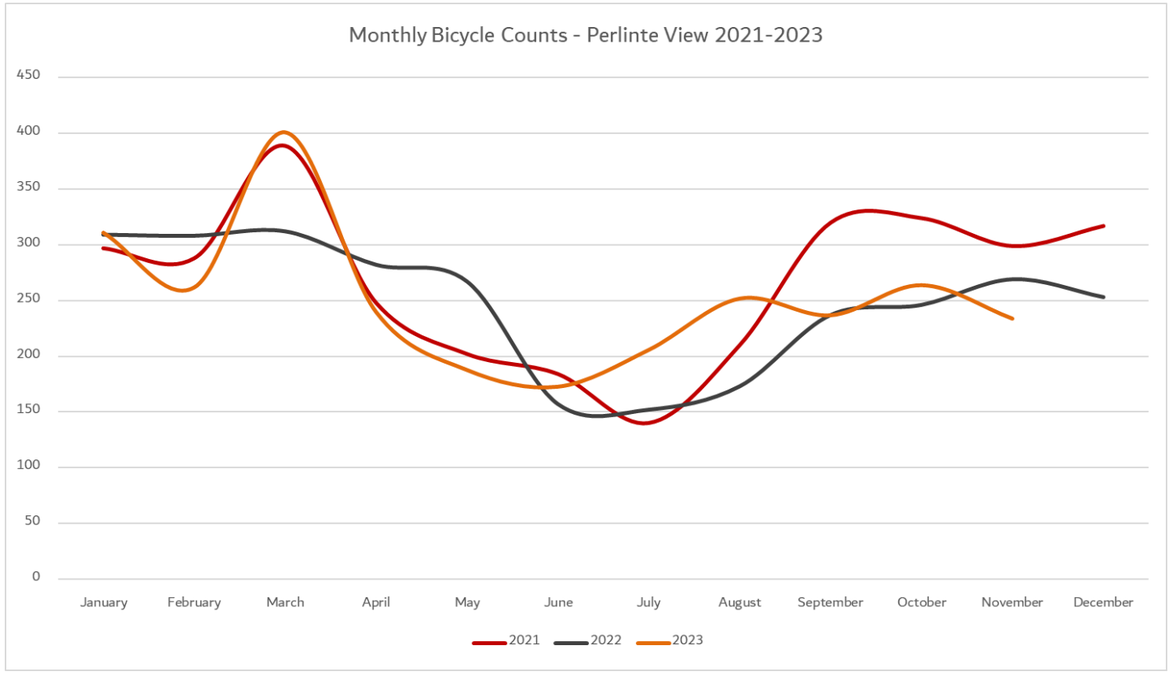


Figure 14 Monthly bicyclist counts Perlinte View - 2021 to 2023 (source: Main Roads WA)

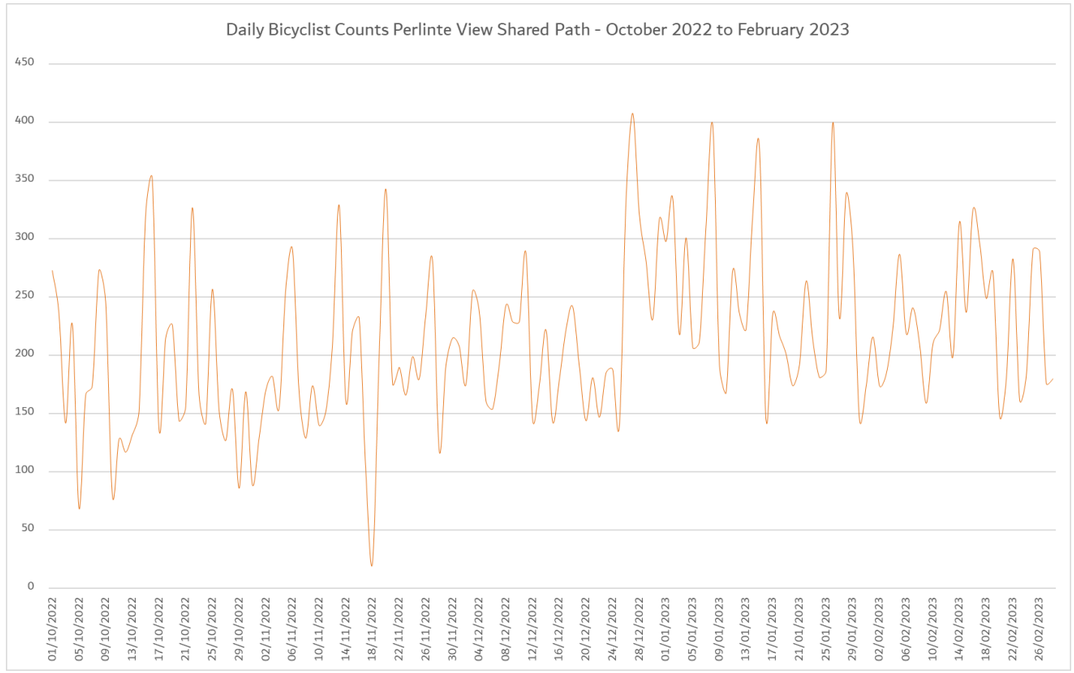


Figure 15 Daily bicyclist counts Perlinte View shared path - October 2022 to February 2023 (source: Main Roads WA)

Figure 16 Examples of bicyclists not using shared paths through reserve area (source: Flyt)

Other available resources for public data include the Super Sunday recreational counts undertaken for the Bicycle Network and Strava heatmapping. These are publicly available resources which provide additional data sets on overall movements through the area.

The Super Sunday counts are undertaken on a voluntary basis and data is generally inconsistent in terms of dates given it is a voluntary program. The latest counts available for the Super Sunday at Coogee Beach along the Perlinte View path connection are shown in Figure 17. These are from a Sunday at the end of November 2020. The counts cover all users of the path connection, including pedestrians, dog walkers, joggers and "other" including scooters. This indicates up to 223 movements per hour over a four hour period at the northern end of the master plan area, with 43% being bicyclists and 41% being walkers.

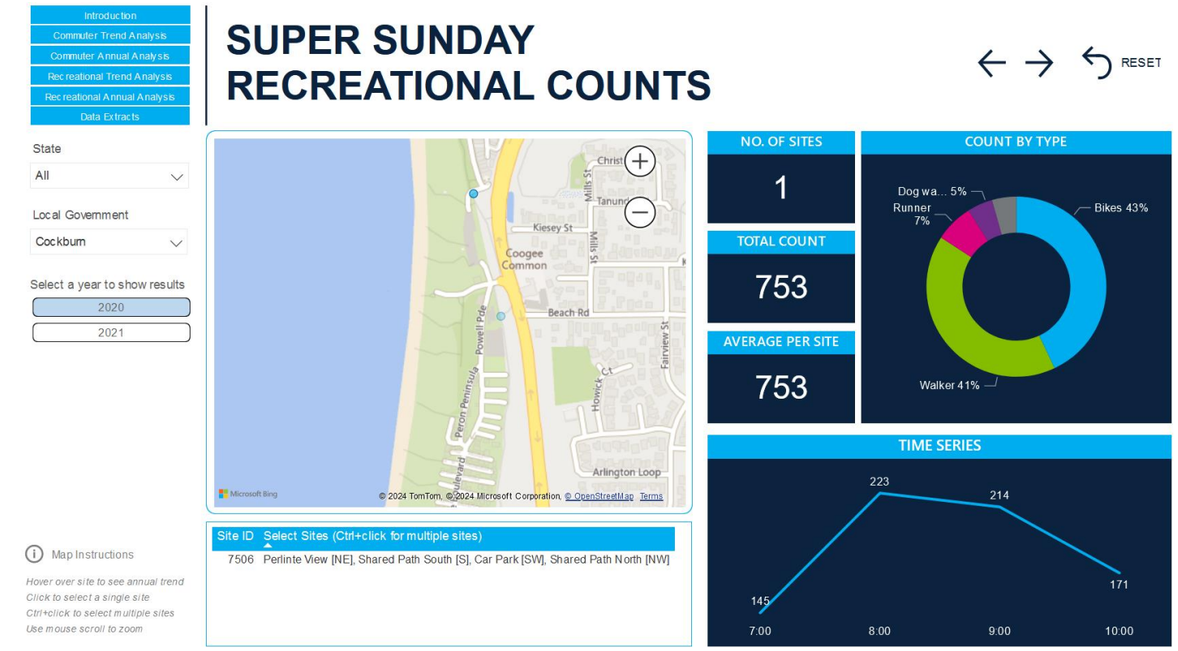


Figure 17 Super Sunday recreational counts – Perlinte View 2020 (source: Bike Network)

The path connection near Beach Road was surveyed in 2021 for three hours on a Sunday in November, with the outputs shown in Figure 18. The recorded volumes at that site were 261 for an hour, the majority being walkers.

Strava heatmapping was examined, with the bicyclist movements shown in Figure 19. This mapping confirms the site observations that a number of cyclists are using Perlinte View and the car parking areas rather than the shared path that extends through the site. Given this mapping would reflect more confident bicyclist behaviours and more on-road cycling, there are also clear routes along Cockburn Road, Orsino Boulevard and Amity Boulevard.

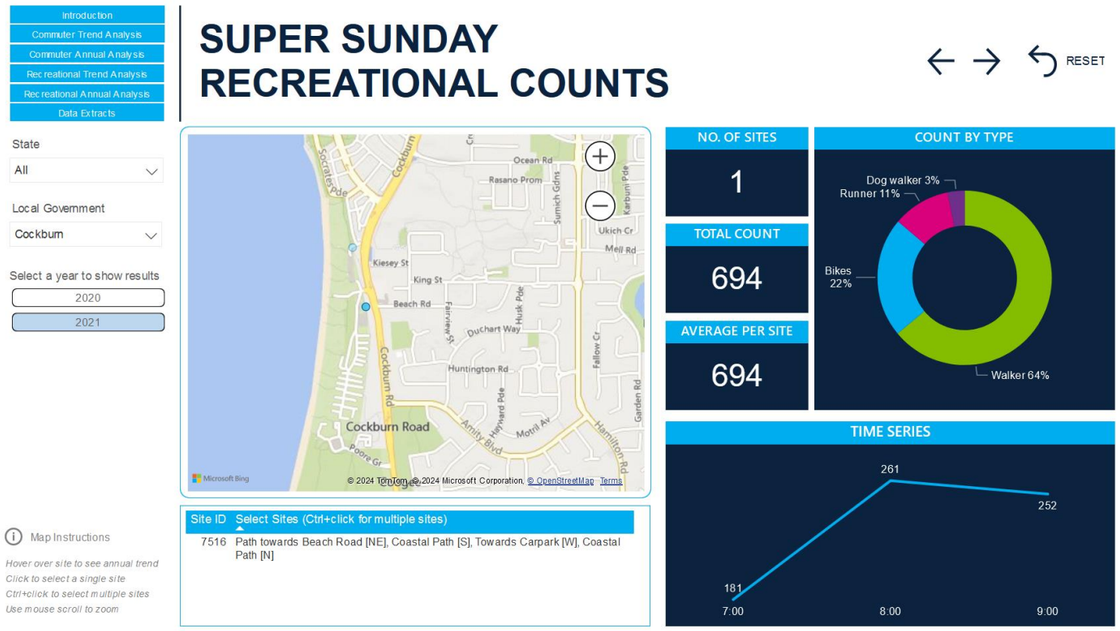


Figure 18 Super Sunday recreational counts 2021 - shared path at Beach St (source: Bicycle Network)

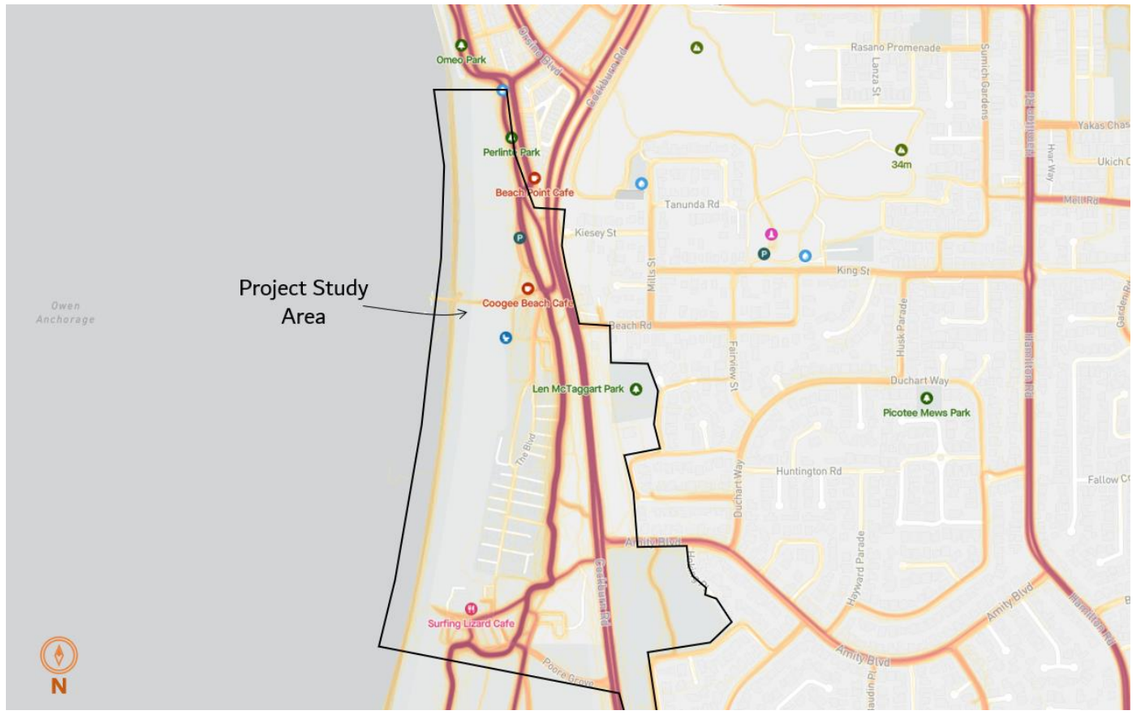


Figure 19 Strava heatmapping for bicycle rides (source: Strava)

2.7 Crash Mapping

Crash reporting for streets adjacent to the project area was examined to understand if there were issues specific to any locations that are relevant, or if there are any patterns evident in terms of safety issues. The crash reporting tool from Main Roads WA was examined for the period from 2019 to 2023 (inclusive). The mapping of crash incidents are set out in Figure 20 (alongside the polygon area which broadly captures the boundary of the Project Study Area) and the summary from the database is shown in Figure 21.

No intersection in the area would qualify as a Blackspot, with the intersection of Cockburn Road and Beach Road recording the highest number of vehicle crashes. There was one hospitalisation incident, with a cyclist being side swiped on Cockburn Road.

The majority of the crashes were recorded during daylight hours, on straight sections of Cockburn Road and can be attributed to human behaviours whilst driving. Two crashes were single vehicles leaving the road and hitting objects (a post in one crash and a bus stop in another).

Crashes involving right hand turn movements at Beach Road, Powell Road and Amity Boulevard were noted – all were during daylight hours, with both crashes at Powell Road being on weekend days.

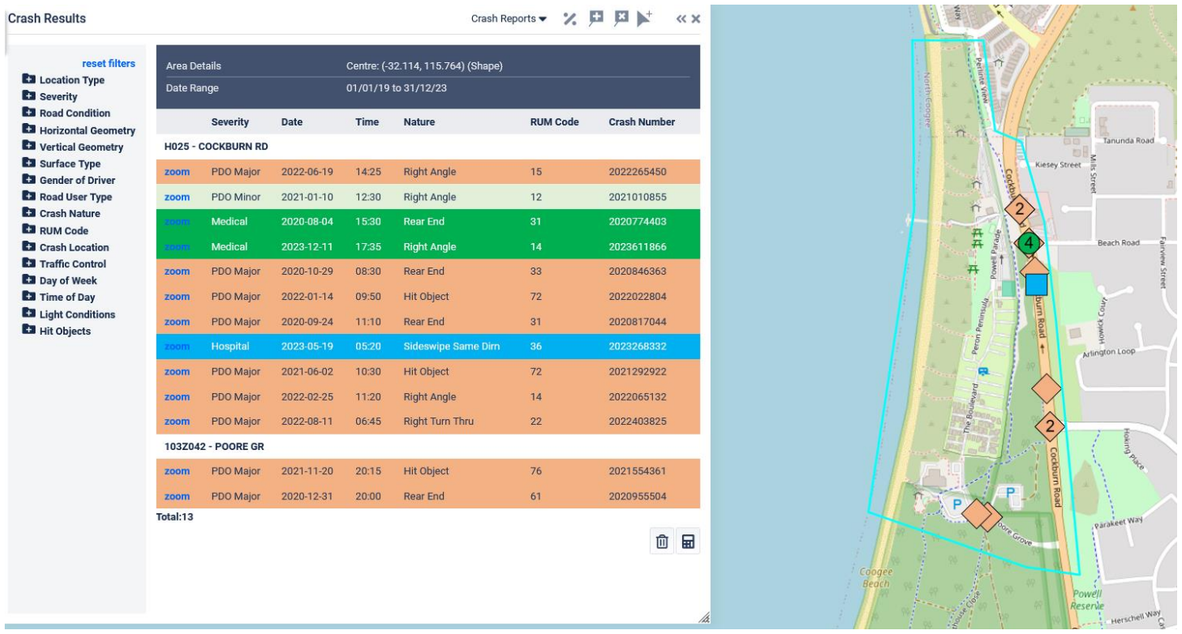


Figure 20 Crash reporting - location of incidents (source: Main Roads WA)

Query Summary

Severity	No.	%
Fatal	0	0
Hospital	1	7.69
Medical	2	15.38
PDO Major	9	69.23
PDO Minor	1	7.69

Year	No.	%
2020	4	30.77
2021	3	23.08
2022	4	30.77
2023	2	15.38

Nature	No.	%
Head On	0	0
Hit Animal	0	0
Hit Object	3	23.08
Hit Pedestrian	0	0
Non Collision	0	0
Not Known	0	0
Rear End	4	30.77
Right Angle	4	30.77
Right Turn Thru	1	7.69
Sideswipe Opposite Dirn	0	0
Sideswipe Same Dirn	1	7.69

Light	No.	%
Dark - Street Lights Not Provided	0	0
Dark - Street Lights Off	0	0
Dark - Street Lights On	1	7.69
Dawn Or Dusk	1	7.69
Daylight	9	69.23
Not Known	0	0
Other / Unknown	2	15.38

Conditions	No.	%
Dry	13	100.00
Not Known	0	0
Wet	0	0

Alignment	No.	%
Curve	4	30.77
Not Known	0	0
Other / Unknown	2	15.38
Straight	7	53.85

Total	13

Figure 21 Crash statistics summary (source: Main Roads WA)

2.8 Restricted Access Vehicle Network

Main Roads WA manages classification of roads for use by heavy or restricted size / mass vehicles. These classifications form the Restricted Access Vehicle (RAV) network and ensure that heavier vehicles over the size of a standard semi-trailer (19m long) can access appropriate parts of the road network and serve specific land use areas in Western Australia (typically industrial or heavy industrial locations).

The RAV mapping tool was examined to examine the classification of Cockburn Road and the extent of the network around the master plan area. As shown on Figure 22, Cockburn Road adjacent to the master plan area is a RAV4 network road, meaning that vehicles with a 27.5m length, or an A-Double configuration (as shown in Figure 23) can traverse the corridor. There are no intersecting roads within the study area, with destination roads further north (within the industrial area west of Hamilton Hill) and to the south (AMC Henderson).

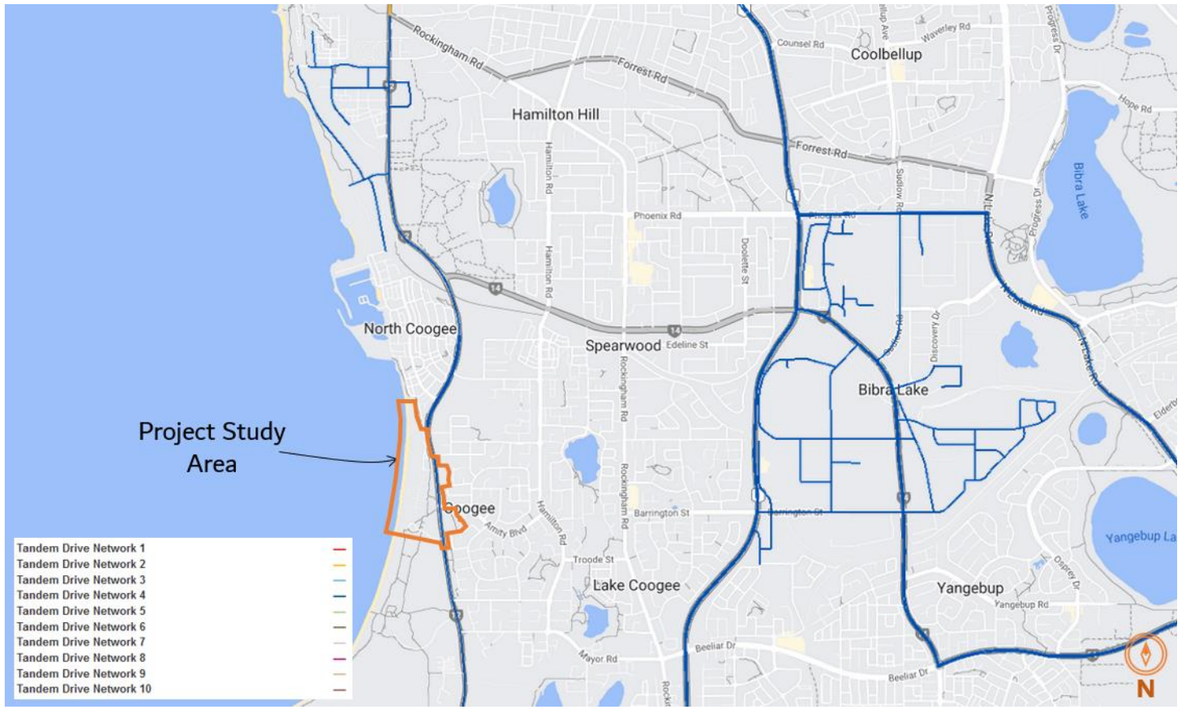


Figure 22 Restricted Access Vehicle network map (source: Main Roads WA)

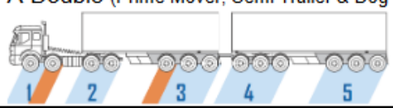
Category 4 RAVs				
Category	**Vehicle Description**	**Length**	**Max. Mass**	**Approved Network**
4A	A-Double (Prime Mover, Semi Trailer & Dog Trailer) 	≤27.5 m	88.5 t	RAV Network 4

Figure 23 RAV4 network approved vehicle configuration (source: Main Roads WA)

Classified count data on Cockburn Road was examined to gather the number of average movements of Class 10 and 11 vehicles (RAV4 equivalent). At the most recent count for the site on Cockburn Road near Spearwood Avenue (2022-23), there were a total of 11 movements in total for the week. The overall proportion of heavy vehicle movements (including semi-trailers) was 7% out of the 19,127 movements at that site. The RAV4 proportion of all vehicles was statistically measured at 0.0006% for the week.

3. COCKBURN ROAD ALIGNMENT

3.1 Introduction

The key transport corridor through the study area is Cockburn Road. This corridor is:

- Managed and maintained by Main Roads WA – the corridor is vested in the Crown and the Commissioner of Main Roads WA has care, control and management of the land and road under powers granted under Main Roads Act 1930
- Reserved as a Primary Regional Road within the Metropolitan Region Scheme
- Is a designated heavy vehicle route, with a Restricted Access Vehicle network classification that permits articulated A-Double trucks up to a length of 27.5m long to use the corridor
- Carries between 10,000 and 19,000 average weekday vehicle movements
- Connects residential areas around South Fremantle and Coogee through to employment focused land uses at Henderson and within the Kwinana Industrial Area
- Is a single lane in each direction – with the carriageway including turning pockets at all intersections for left and right turn movements to be accommodated off the main through lane
- Widens to the north of the Powell Road intersection to a divided dual lane configuration in each direction prior to a signalised intersection at Orsino Boulevard
- Has four intersections adjacent to the study area – all of which are controlled by give way controls on the minor intersection legs (Powell Road, Beach Road, Amity Boulevard and Poore Grove)
- Caters for Transperth bus route 528
- Has no segregated bicyclist infrastructure, with some painted line markings for bicyclist movements north of Powell Road and also at the Poore Grove and Amity Boulevard intersections.

The alignment of Cockburn Road past the master plan area has a historical strategic context. This is illustrated through previous strategic planning (Perth and Peel @3.5million) and the MRS. The 2016 draft plans for the Perth and Peel @3.5million (Figure 24) included road network proposals from Main Roads WA which would have extended the Freeway network and include the Fremantle - Rockingham Freeway (and tunnelling under the Swan River through to Dalkeith and Claremont). This would have included the existing Cockburn Road alignment being a controlled access Freeway.

Land set aside for this alignment is obvious from the MRS reserves shown in Figure 25, with the Cockburn Road alignment for the Fremantle – Rockingham Freeway continuing past the master plan area to the south until Mayor Road where it then heads south-east towards the Rockingham Road corridor.

The need for this strategic connection, and changing of Cockburn Road from its present configuration to a Freeway, has been effectively removed through the Westport recommendations for a new container port at Kwinana and the removal of the Roe Highway link through to Fremantle Port. Whilst the reservations and controls over the Cockburn Road corridor remain, the future demands and needs for Cockburn Road to cater for a significant volume of traffic (primarily freight or commercial traffic) is no longer evident, nor is it backed by strategic State Government direction.

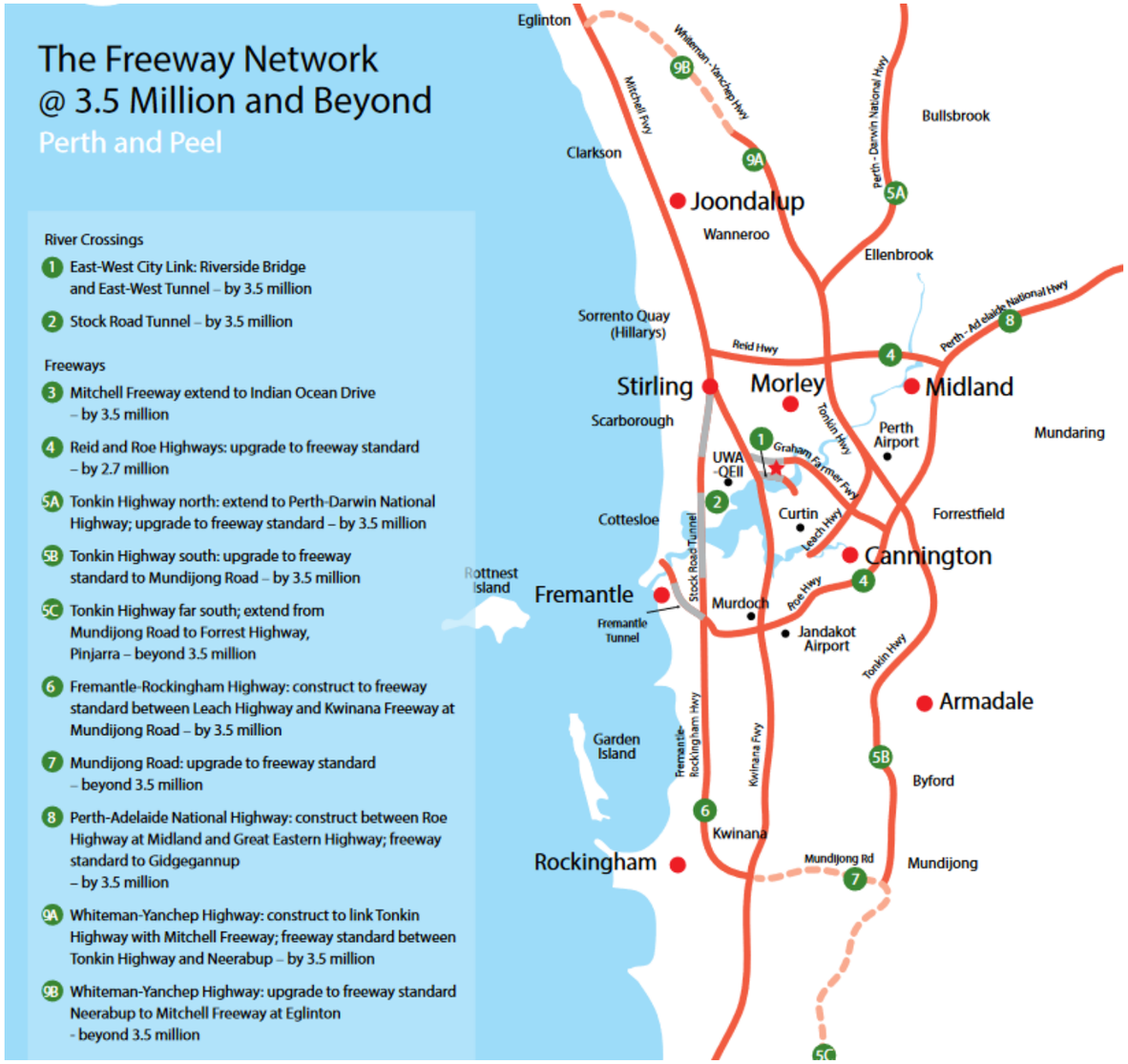


Figure 24 Perth and Peel@3.5m - road network proposals from 2016 (source: DoT)

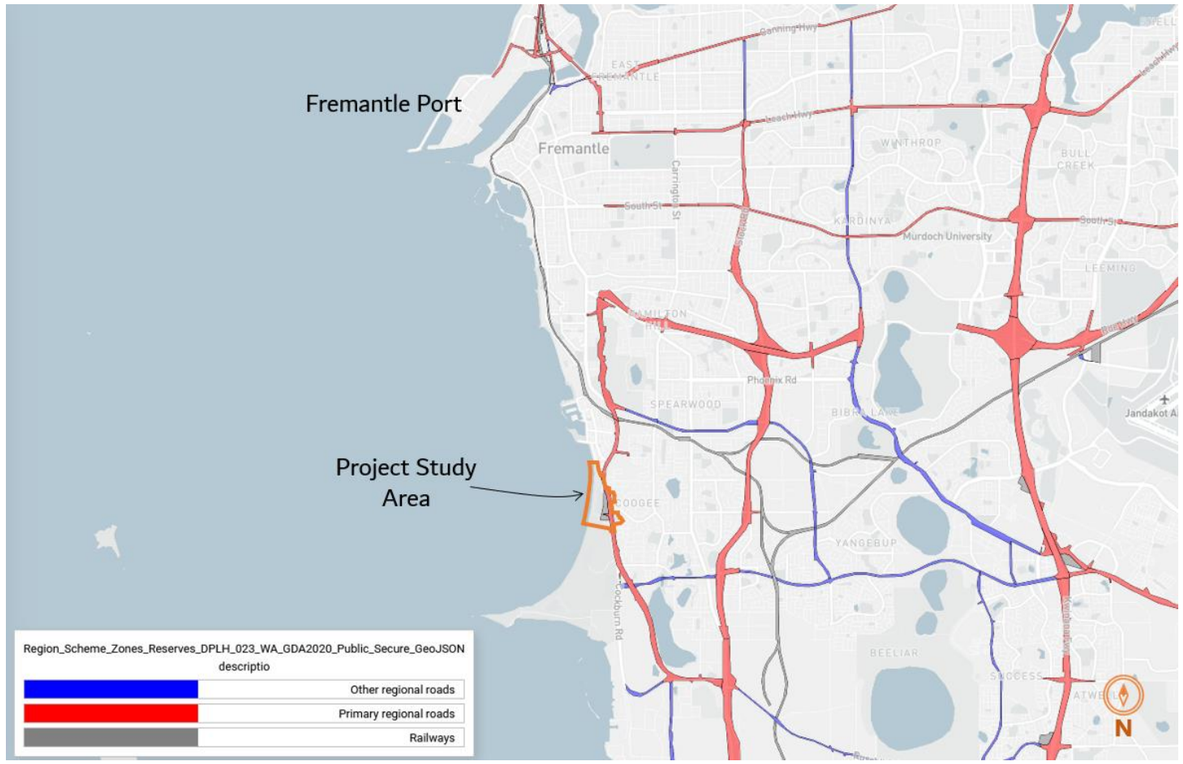


Figure 25 MRS reservations for transport infrastructure (source: Planwisely)

3.2 CBRMP Transport Assessment

As set out in section 2.4, the CoC engaged Porter to undertake a review and assessment of the CBRMP in April 2020 with a specific focus on the alignment and intersections along Cockburn Road. The assessment for the CBRMP was completed for weekday periods when the volumes of traffic on Cockburn Road are the highest. Growth rates for traffic were set at 1% per annum up to 2026 and then 9% per annum between 2026 and 2031.

The growth rates applied to the corridor, in particular the later forecast scenarios, are exceptional given the nature of the corridor and historical trends. This rate may have assumed changes to the broader strategic network or specific growth projects coming on line, but the volumes on Cockburn Road past the master plan area have not grown in the space of a decade. An example of this is through the Metropolitan Digest results where Cockburn Road at Spearwood Road did not grow in daily volumes between 2014 and 2022 – both years had volumes of 18,600 per day. Although daily volumes would fluctuate, the strategic movements have not grown.

The assessment scenarios tested were:

"*The intent of this assessment is to analyse the existing situation and a future scenario incorporating a future access to Cockburn Road as outlined in the Masterplan. The existing layout of this section of Cockburn Road (Powell Road to Amity Boulevard) was analysed with the current traffic counts (2020). For comparison purposes the existing layout was also analysed for predicted 2026 and 2031 years traffic.*

With increased traffic volumes along Cockburn Road the 2031 scenario has assumed a central median will be constructed along Cockburn Road to accommodate stage right turn movements at both Powell Road and Beach Road intersections with Cockburn Road. A new connection to Cockburn Road has been suggested by the Masterplan to provide a separate access to the Holiday Park. This proposed road network has been analysed for two future years scenarios being 2026 and 2031.

As per the existing road network layout the 2031 proposed road network assumes a central median on Cockburn Road to accommodate staged right turns from the intersecting minor roads. In summary the assessed scenarios are as follows:

- *Existing Road Network 2020 year (current traffic)*
- *Existing Road Network 2026 year (predicted traffic)*
- *Predicted Road Network 2031 (predicted traffic. Assumes a median on Cockburn Road to accommodate staged right turns)*
- *Proposed Road Network 2026 (predicted traffic)*
- *Proposed Road Network 2031 (predicted traffic. Assumes a median on Cockburn Road to accommodate staged right turns)*

Key intersections were analysed using the SIDRA(v8) intersection modelling computer program. The key intersections were modelled as a linked network due to their proximity along Cockburn Road and include:

- *Powell Road/Cockburn Road*
- *Beach Road/Cockburn Road;*
- *New access to Holiday Park/Cockburn Road; and*
- *Amity Boulevard/Cockburn Road.".*

The analysis was undertaken for the AM and PM peak periods. Figure 26 *and* Figure 27 *show diagrammatically a comparison of the am and pm peak results for the five scenarios in relation to the turning movements on the minor roads based on average delay and degree of saturation.*"

The assessment concludes:

"*By 2031, assuming a wide median along Cockburn, the SIDRA analysis suggests the Powell Road intersection will become over saturated resulting in excessive delays. This suggests that an intersection treatment such as a roundabout or traffic signals would be required by that time. Redistributing the traffic from Powell Road to a new access on Cockburn Road does result in spare capacity at the Powell Road intersection with Cockburn Road and satisfactory operation in 2031*".

The outcomes of the assessment indicate that adding a median for safety measures and the introduction of a new T-Intersection access point into the caravan park area would result in a dampening of traffic engineering metrics relating to traffic flow. It also notes that Main Roads WA did not support the configuration proposed and wanted to rationalise the access points rather than increase them as any additional conflict points along Cockburn Road would be a safety and design issue for the regional through movements.

Examination of the SIDRA results also indicates that the new access point at the caravan park would operate at a poor level of efficiency from the outset. Peak holiday periods were also not assessed when higher volumes on side streets are evident.

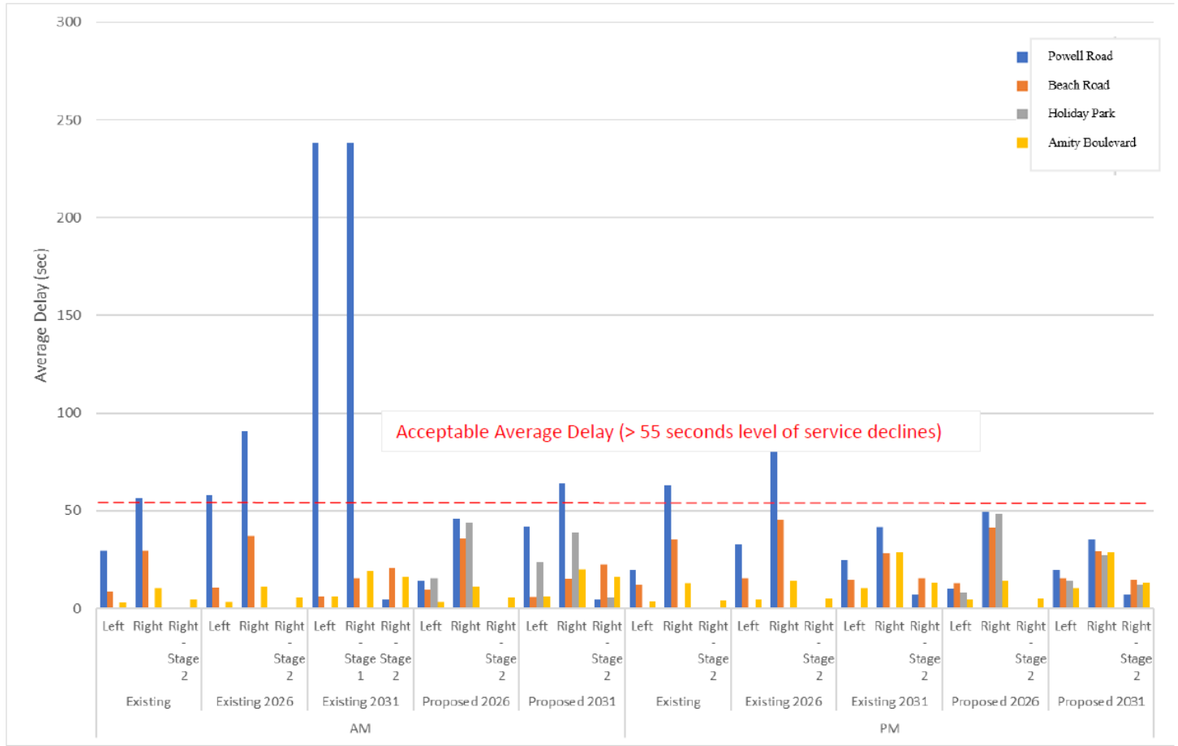


Figure 26 Average delay of side road approach movements - 2020 CBRMP assessment

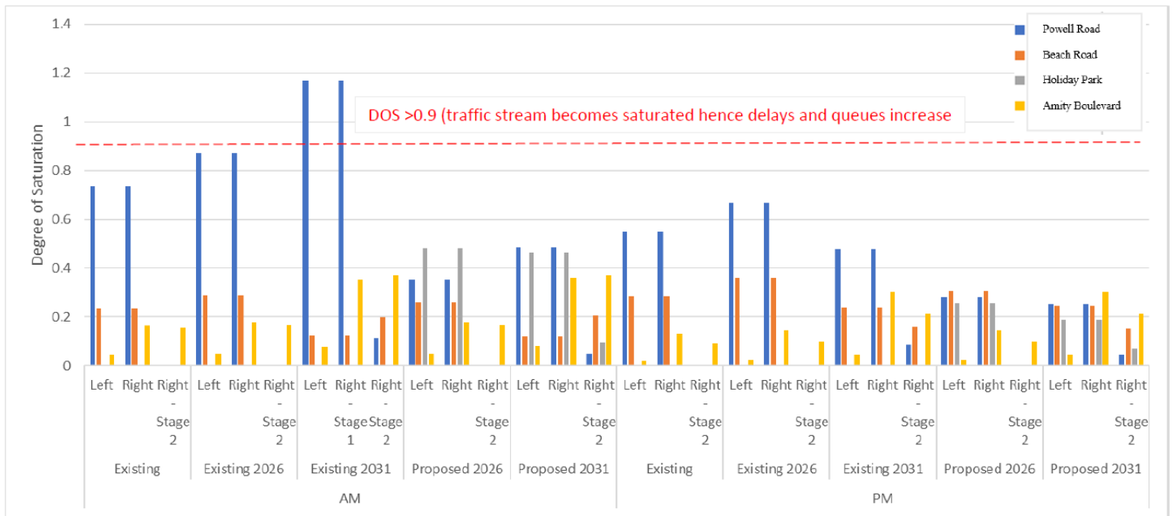


Figure 27 Degree of saturation of side road approach movements - 2020 CBRMP assessment

3.3 Pedestrian Crossing – Coogee Common

After planning and assessment, site works commenced in January 2024 for the installation of a signalised pedestrian crossing of Cockburn Road adjacent to the Coogee Common development to the north of Beach Road. The site plan for the works is shown in Figure 28 with the layout of the signals and the intersection after completion of construction is shown in Figure 29.

The pedestrian signals would provide a dedicated and safe crossing point of Cockburn Road and provide pedestrian connectivity to Coogee Common, residential areas along Beach Road and informal parking areas on the northern side of Cockburn Road within the Primary Regional Road reserve area.

The signals would be likely to have a range of outcomes, including:

- Providing safer pedestrian connectivity and likely increase movements to the reserve area to the east of Cockburn Road
- More legible and safer access to Bus Stop 10662 on Cockburn Road for users of the reserve and beach area
- Regulating traffic flow along Cockburn Road north and south of the site (more breaks in flow during peaks)
- Allow for safer vehicle turning movements out of both Beach Road and Powell Road
- Addressing some safety issues at the intersection of Cockburn Road and Powell Road.

Figure 28 Site plan - Cockburn Road pedestrian signals (source: Main Roads WA)

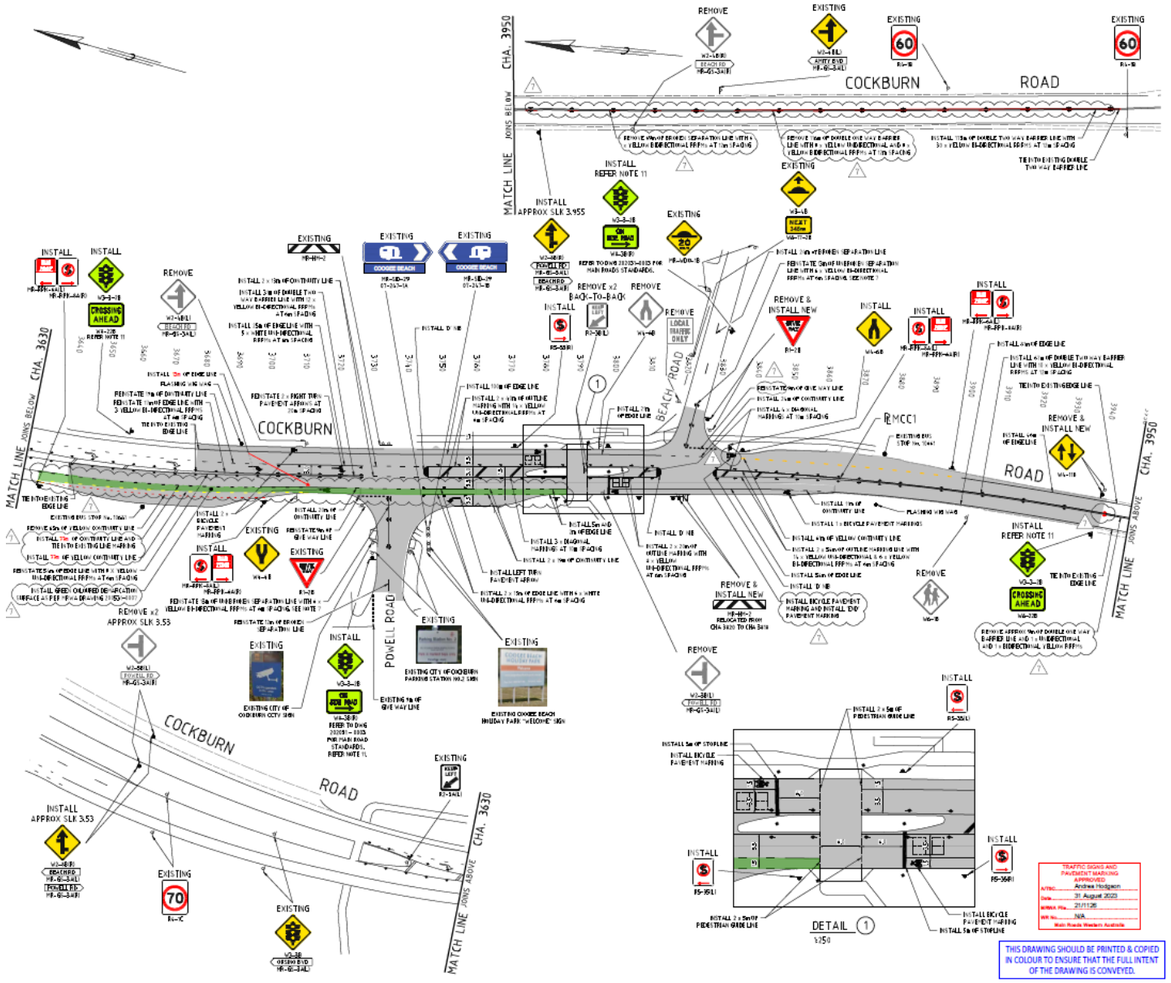


Figure 29 Pedestrian signals layout plan (source: Main Roads WA)

Given these signals are currently in the installation phase, their function would need to be included within the assessment of forecast year scenarios for the Master Plan.

3.4 CBRMP - Main Roads WA Response

As part of the engagement for the master plan, Main Roads WA was engaged with alongside all other planning and transport agencies. Given the corridor is under their remit, any future planning or assessment of alternative configurations put forward for Cockburn Road would need to consider advice from Main Roads WA. Although the purpose of this project is to develop a new master plan, the initial response from Main Roads WA was focussed on the 2014 CBRMP and the proposals in that plan. Although the response information was not sought for that plan, the response relating to the corridor was instructive in terms of issues and constraints for the master plan. The response in full is:

"*Traffic Impacts*

Prior to the consideration of land uses it is advised that the City undertake a Traffic (sic.) *Impact Assessment (TIA) in accordance with the WAPC's Transport Impact Assessment Guidelines (August 2016) to determine the impact of proposed land uses upon the road and movement network. Such an assessment should be undertaken at an early stage as to inform land use consideration for the Land Use Master Plan. Local traffic treatments, and modifications to intersections, will require approval from Main Roads under the Road Traffic Code 2000. Further advice can be provided to the City once a draft TIA has been prepared.*

2. Vehicular Access

The proposed access from Cockburn Road to the Holiday Park, south of Beach Road, is not supported by Main Roads. There is no justification for this access point as no major redevelopment within the Master Plan area is proposed. The proposed access point will remove connectivity between the holiday park and Powell Road. Current planning for the Fremantle Rockingham Controlled Access Highway (FRCAH) proposes the continuation of Amity Boulevard, across Cockburn Road, which will provide a new access point to the holiday park.

Furthermore future planning for Cockburn Road includes the area around Powell Road, which would result closure of the current alignment of Powell Road, and a new signalised intersection being installed at the intersection of Beach Road and Cockburn Road.

3. Upgrades to be confirmed

The Coogee Beach Landscape Master Plan proposes to "Provide right turn facility and enhanced entry and exit lanes" on to Cockburn Road to the south of the Master Plan area. Please note that right and left turning facilities are already provided for in this location.

Further information is required to clarify whether existing arrangements are proposed to be modified. It is unclear where the Primary Regional Road Reservation (PRRR) under the Metropolitan Regional Scheme (sic.) *is impacted by the proposed reconfiguration of parking bay hardstand areas and other works. The PRRR should be clearly shown on the plans. Please be advised Main Roads does not support any additional car parking areas within the PRRR.*

4. Pedestrian Movements

Pedestrian access around Primary Regional Roads is an important issue, particularly the efficiency of connectivity when traversing the State Road network. It is acknowledged, works are underway to install a signalised pedestrian crossing of Cockburn Road, opposite the Coogee Common, to the north of Beach Road. The signalised pedestrian crossing will also create gaps in traffic for vehicles exiting Powell Road when pedestrians activate the crossing, which will assist with vehicular movements and pedestrian safety in the area.

5. Future Road Planning

Cockburn Road is a major road which connects Fremantle and Kwinana and carries a significant volume of heavy vehicles. As detailed above, the ultimate road design proposes to close the current alignment of Powell Road and a new signalised intersection is to be installed at the intersection of Beach Road and Cockburn Road. Please refer to 'Carriageway Pattern Plan 9721-119-2' attached.

Regarding tree planting, please note a removal strategy will be required to address how the trees proposed to be planted in the road reserve are to be successfully removed in the future. Any trees planted would likely need to be removed if the land is required for

road widening purposes. Reference to a tree removal strategy and any required approvals from the WAPC should be referenced in the documentation provided with the Master Plan.

The upgrade and widening of Cockburn Road is not in the Main Roads current 4-year forward estimated construction program. All projects not listed are considered long term. Please be aware that timing information is subject to change and that Main Roads assumes no liability for the information provided.

6. Infrastructure Contributions

The careful planning and coordination of infrastructure is fundamental to the economic and social well-being of any community. New development should consider how infrastructure can be effectively coordinated and funded to address the needs of the community. Forward planning for transport infrastructure upgrades should be identified part of the structure planning process. The City is encouraged to establish a Developer Contribution Plan under the provisions of State Planning Policy 3.6 – Infrastructure Contributions to ensure upgrades are appropriately funded and considered.

7. Waste Collection

Resource and waste collection should occur via collection on the local road network. Such provisions should be incorporated into the future Land Use Master Plan.

8. Built Form

The City is required to ensure development is located outside the PRRR. The primary setback to any building is to be measured from the edge of the PRRR rather than the allotment boundary. Such provisions/development standards should be incorporated into the future Master Plan to ensure such encroachments do not occur and orderly and proper planning is facilitated.

9. Road Noise Assessment

Noise sensitive land uses located adjacent to the PRRR are required to implement acoustic attenuation measures in accordance with WAPC State Planning Policy 5.4 – Road and Rail Noise. An acoustic assessment complying with State Planning Policy 5.4 is to be prepared supporting any noise sensitive land uses which may be incorporated into the future Master Plan.

10. Heritage

Please be advised a separate approval from the State Heritage Office / WAPC may be required prior to any proposed works within the turf overflow parking area east of Cockburn Road due to the proximity of the State-Registered historic heritage site, "Tree Lime Kilns Group, Cockburn".

11. Environment

Proposed turf removal and weed control aside, removal of vegetation should be avoided where possible noting the development area is an Environmentally Sensitive Area. Use of locally native species in the additional plantings proposed is recommended to assist with the ecological buffering of adjacent Bush Forever Site 341 and Conservation Park Reserve R 49220.

12. General comments

- *No part of any future development is to be located upon land reserved as PRRR under the MRS. This is to ensure development does not compromise the ultimate road design for Cockburn Road. This includes but is not limited to car parking, building anchors, awnings, retaining walls, substantial landscaping, and any associated infrastructure services. It is recommended the City consult with the Public Transport Authority regarding location of rail impact, crossings, and associated assets.*
- *The Land Use Master Plan proposes various artwork and signage installations. Please note an assessment of these installations against Main Roads "Policy and Application Guidelines for Advertising Signs within and beyond State Road Reserves" will be required at the detailed design stage.".*

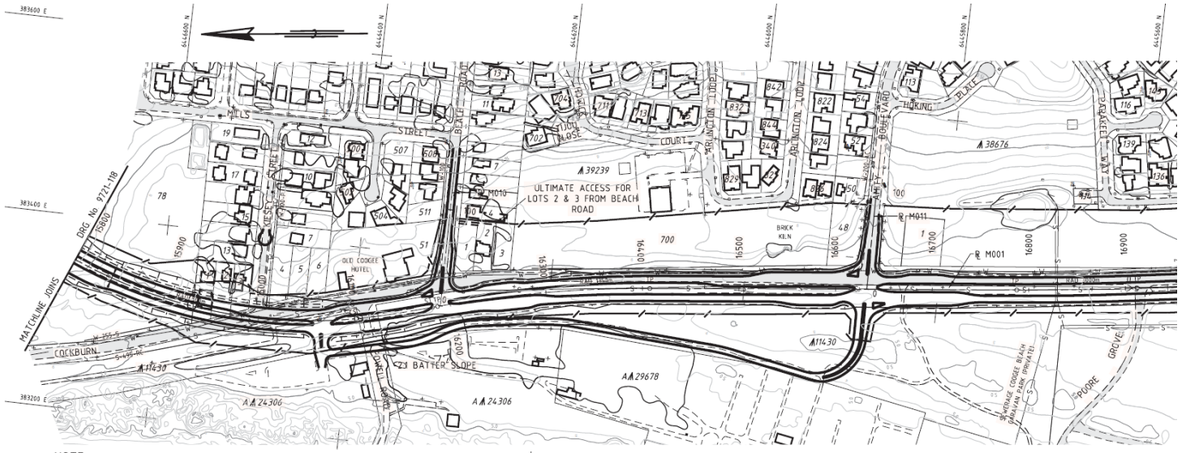


Figure 30 Main Roads WA carriageway pattern and profile (source: Main Roads WA)

4. PARKING SUPPLY AND DEMANDS

4.1 Introduction

There has been a substantial amount of information collected over the past five years to inform the master plan process on parking supply and demand. For Coogee Beach, the availability of parking drives the level of visitation during the peak summer periods and on weekend days.

At present, it is the primary means by which visitors access the area and for many visitors it is seen as the only means of accessing the area. The wider visitation catchment / attractiveness, and lack of viable transport alternatives, also narrows down choice and therefore reliance on parking being supplied at the site.

The provision of parking does, however, also result in negative amenity and safety issues. The level of formalised parking within the master plan area, specifically around Coogee Beach and the existing park area, does not cater for demands at busier times and this then results in significant levels of informal parking in the area resulting in safety and access issues – primarily along and across Cockburn Road. Entitlement over parking – which is inherently self centred and competitive – also results in micro aggressions and sometimes dangerous behaviour in access parking or parking in areas that are not suitable or safe.

The purpose of this section is to examine existing parking patterns based on empirical evidence.

4.2 Parking Supply

The areas around Coogee Beach and the master plan are not time controlled and there is no paid parking. Data collected for the CoC in 2023 also set out the supply of marked parking available in various areas of the master plan. There is a total of 614 marked, formal bays within the master plan area based on the survey count from 2023.

This includes all types of available bays. The spread of bays is shown in Figure 31. In addition to formal parking areas, a range of verges have become informal parking areas, being:

- The verge area on the south-western corner of the intersection of Cockburn Road and Powell Road (Figure 32)
- Verges along Cockburn Road near Beach Street – on both the western and eastern verges within the Primary Regional Road reserve (Figure 33)
- Verge area on Cockburn Road south of Amity Boulevard that provides access to a shared path that links into the surf lifesaving area of Coogee Beach (Figure 34)
- Verge area either side of Cockburn Road at the intersection of Poore Grove (Figure 35).

There is also illegal verge parking on Poore Grove and the access way into parking areas.

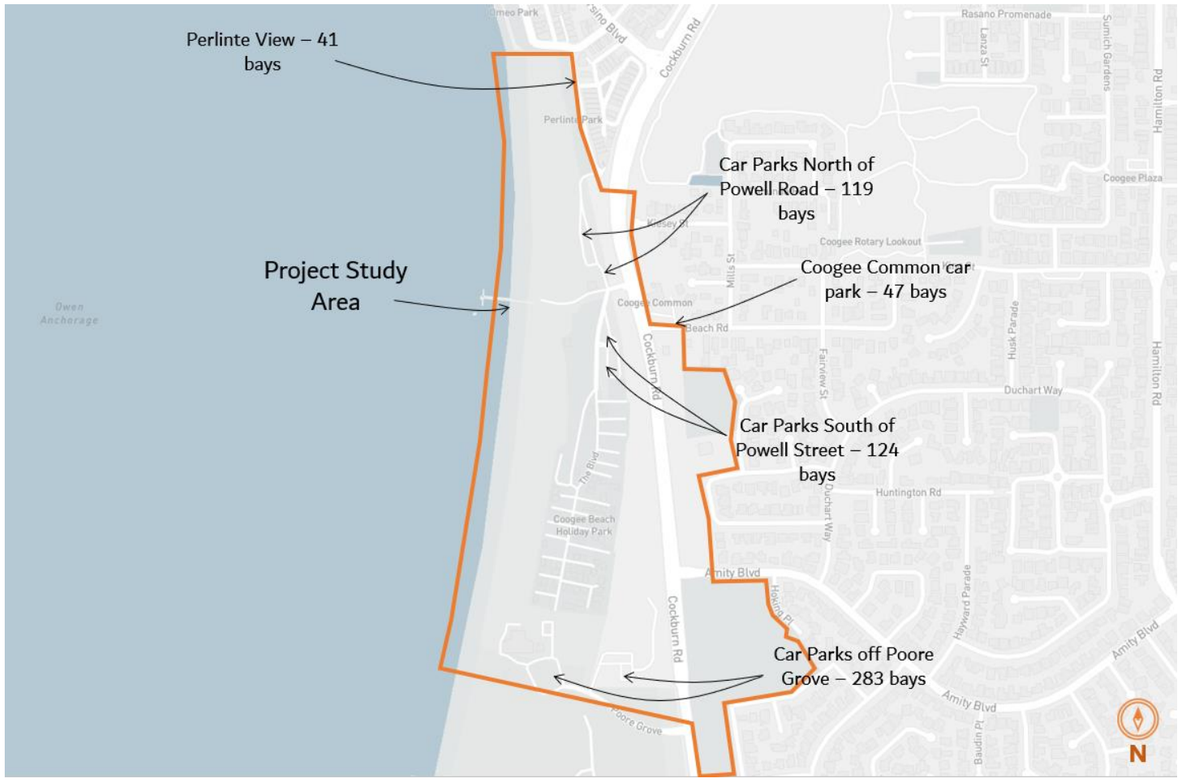


Figure 31 Formal marked parking bays (source: CoC)

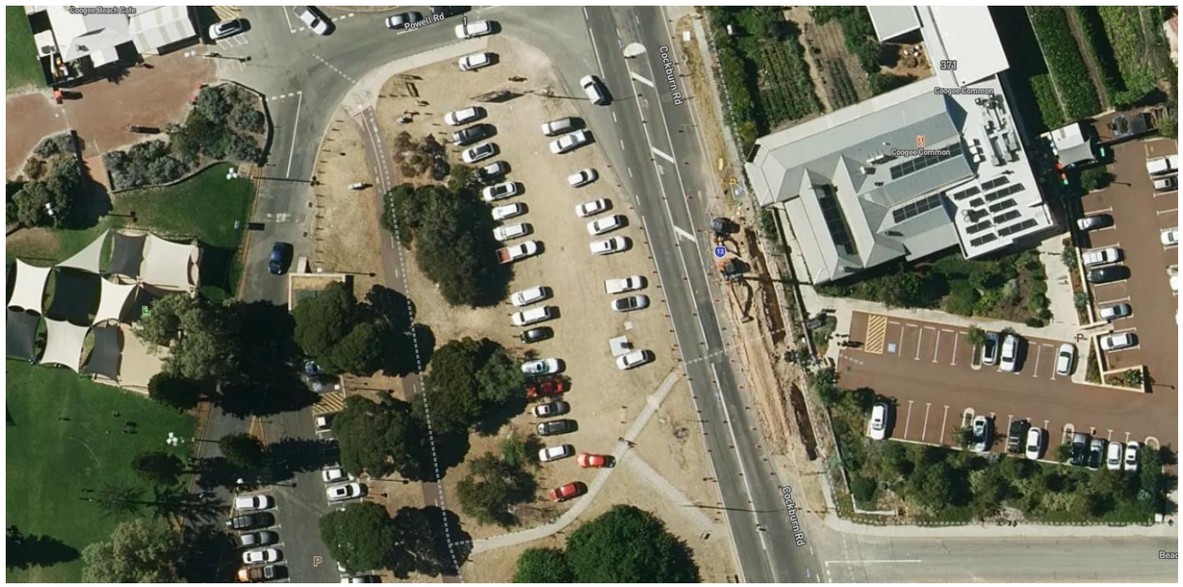


Figure 32 Informal parking area - Powell Road (source: Metromap)

Figure 33 Informal parking areas off Beach Road and Cockburn Road (source: Metromap)

Figure 34 Informal parking area off Cockburn Road south of Amity Boulevard (source: Metromap)

Figure 35 Informal parking areas off Cockburn Road near Poore Grove (source: Metromap)

The capacity of those areas is difficult to ascertain, however general calculations using other informal event area ratios of one bay per 30m² (highly managed) to one bay per 35m² (not managed) per vehicle provide the following high level indicative capacities:

Table 3 Estimated informal parking supply calculations

Area	Size (est.)	30m² ave.	35m² ave.
Powell St	990 m²	33	28
Beach St	640 m²	21	18
West Verge Cockburn	680 m²	23	19
East Verge	10,060 m²	335	287
Amity (East of Cockburn)	5,800 m²	193	166
Amity (West of Cockburn)	1,180 m²	39	34
Poore Grove (East of Cockburn)	8,600 m²	287	246
Poore Grove (West of Cockburn)	1,400 m²	47	40
Totals		1,008	874

Taking into account actual and indicative parking supply, the broad parking capacity at the respective ends of the master plan area are:

- Coogee Beach (Jetty End) – 331 formal bays and between 352 – 412 informal vehicles parked
- Coogee Beach (Surf Lifesaving Club End) – 238 formal bays and between 486 and 566 informal vehicles parked.

It should be noted that the area to the east of Cockburn Road was also calculated as the space available in a rough line with the northern arm of Arlington Loop. If the southern area around the kilns site was to be included as it was for the Australia Day event in 2023, the informal parking capacity there is a further 171-200 vehicles. The formal parking at the Coogee Community Hall was also not considered in this calculation.

The occupancy of vehicles using the beach during peak times is also much higher than typical commuting vehicle trips. From site observations, and details from other projects completed (such as the Hillarys Boat Harbour Integrated Transport Strategy), occupancy of vehicles can be assumed to be at or around 3 people per vehicle during the peak periods. So, for the beach areas, this capacity would be most appropriate during weekends and holiday periods.

The calculated nominal capacities using the details above are set out in Table 4. This shows a nominal capacity of the areas as being:

- Coogee Beach (Jetty End) – between 683 and 743 vehicles and 2,049 and 2,229 people
- Coogee Beach (Surf Lifesaving Club End) – between 769 and 849 vehicles and 2,307 and 2,547 people.

Table 4 Nominal vehicle parking capacities for master plan area (existing)

Location	Bays / Size (est.)	People	30m² ave.	People	35m² ave.	People
Perlinte View	41	123	-		-	
Car Parks (N of Powell)	119	357	-		-	
Car Parks (S of Powell)	124	372	-		-	
Coogee Common	47	141	-		-	
Car Parks off Poore Grove	283	849	-		-	
Powell St	990 m²	-	33	99	28	84
Beach St	640 m²	-	21	63	18	54
West Verge Cockburn	680 m²	-	23	69	19	57
East Verge	10,060 m²	-	335	1005	287	861
Amity (E of Cockburn)	5,800 m²	-	193	579	166	498
Amity (W of Cockburn)	1,180 m²	-	39	117	34	102
Poore Grove (E of Cockburn)	8,600 m²	-	287	861	246	738
Poore Grove (W of Cockburn)	1,400 m²	-	47	141	40	120
Nom. Capacity Jetty End (Low)	683 vehicles and 2,049 people					
Nom. Capacity Jetty End (High)	743 vehicles and 2,229 people					
Nom. Capacity Club End (Low)	769 vehicles and 2,307 people					
Nom. Capacity Club End (High)	849 vehicles and 2,547 people					

4.3 Parking Occupancy

There were a range of resources available to understand peak and regular parking occupancy within the project area. Thee resources were:

- Historical aerial imagery for the project area over the past decade using Metromap
- Parking survey aerial images taken for Australia Day in 2023
- Occupancy surveys completed on behalf of the CoC in March 2023 to coincide with events at Coogee Beach
- On-site observations and sample surveys from January 2024 for this assessment.

These resources allowed the assessment to understand general use, peak use and event parking occupancy.

Occupancy at marked bays and informal parking areas at Coogee Beach within the master plan area fluctuates on a daily, monthly and yearly basis. Demands are very much driven by use of the beach (rather than the land uses in the master plan area) and can even vary depending on user group profile (Sundays tend to be busier given higher volume of families at the beach).

The aerial images varied depending on time of year and day of the week they were taken. Although images aren't time stamped, angle of shadows can provide a general time of the day. An example being the image taken on 15 January 2022 shown in Figure 36 with shadows being cast to the west meaning that the image during summer would be mid-morning.

Figure 36 Example of aerial capture 15 January 2022 (source: Metromap)

The highest occupancy recorded from aerial capture for each end of the master plan area were:

- Northern end near Jetty – 20 January 2024 – 272 in marked bays and 43 informal vehicles parked
- Southern end near Surf Lifesaving Club – 15 January 2022 – 244 in marked bays and 89 informal vehicles parked.

Parking surveys completed for Australia Day in 2023 provided the CoC with the opportunity to understand the capacity available for events given that the formal parking areas at the beach had some bays coned off for event purposes. The CoC managed the informal parking area provided to the east of Cockburn Road. An example image from that event is shown in Figure 37.

The observed volumes for the informal parking areas from the event day were a total of 457 comprised of:

- 412 in the informal area to the east of Cockburn Road near Beach Street
- 25 in the informal area adjacent to Amity Boulevard
- 33 in the informal area adjacent to Poore Grove.

From the aerial images supplied, around 70 vehicles were parked south of Powell Road (with the assumption that they were event / operations related) and the car park to the north of Powell Road was over capacity with 125 vehicles counted. No images were provided of Perlinte View or of the car parking areas off Poore Grove. Images of the Coogee Common car park indicate it was barriered / there was no general parking available or it was reserved for bookings only.

At the Jetty end of the study area, assuming Perlinte View was fully parked, there would have been a total of 648 vehicles parked for Australia Day. If Coogee Common was later at capacity, this would take the total volume to 695. At the southern end near the Surf Lifesaving club, if there was an assumption that the marked bays were at capacity, there was a total of 341 vehicles.

Figure 37 Australia Day parking survey 2023 (source: CoC)

Based on the nominal capacities set out in Table 4, the peak Australia Day event parking shows the overall occupancy being:

- At the Jetty end, 102% of the nominal capacity with event parking being one vehicle per 35m^2
- At the Jetty end, 94% of the nominal capacity with event parking being one vehicle per 30m^2
- At the Surf Club end, 44% of the nominal capacity with event parking being one vehicle per 35m^2
- At the Surf Club end, 40% of the nominal capacity with event parking being one vehicle per 30m^2
- Overall, 64% of total capacity used with event parking being one vehicle per 35m^2
- Overall, 58% of total capacity used with event parking being one vehicle per 30m^2.

This attributes a value to significant event parking. To understand the general peak period parking occupancy, the surveys from March 2023 were examined and validated through site surveys in January 2024. The surveys from March 2023 covered the Coogee Live event (11th and 12th March 2023) and the following weekend. The daily profiles are shown in Figure 38, with the event days having twice as much occupancy as the nearest non-event day.

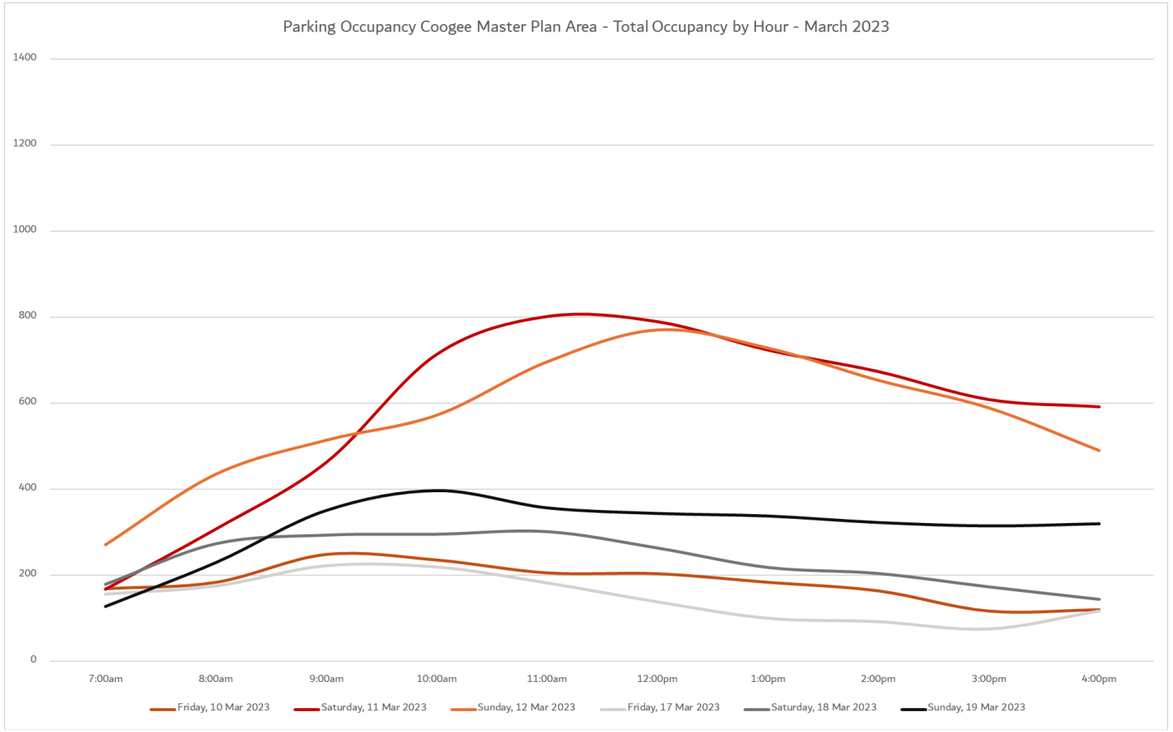


Figure 38 Parking occupancy per day - March 2023 Coogee Live surveys (source: CoC)

To examine the impact of the event parking and non-event parking on the overall supply of both formal and informal parking in the master plan area, the volume of bays occupied throughout the days surveyed was set against overall formal and informal supply. Those outcomes are shown in Figure 39. At first viewing, these charts indicate that the level of demand for peak parking does not come close to reaching the level of supply – or that there is an oversupply, or readily available level of supply to cater for any peak scenario. In reality, however, much of this supply is informal or areas of dirt or grass that are being taken up by vehicles – in many instances this is unmanaged or results in amenity issues or safety risks, such as impeding pedestrian paths or sight lines at intersections.

To provide a more realistic view, only marked parking occupancy for the March 2023 Coogee Live data was examined, as shown in Figure 40 and Figure 41. This shows that the informal parking areas on the Saturday were more heavily used and that total occupancy for marked bays was closer to 85% at its peak – which is an accepted level of occupancy to indicate that parking is "full".

Outside of the Coogee Live weekend, the other relevant peak is for Sunday 19th March, which was the highest overall non-event occupancy at just under 70%.

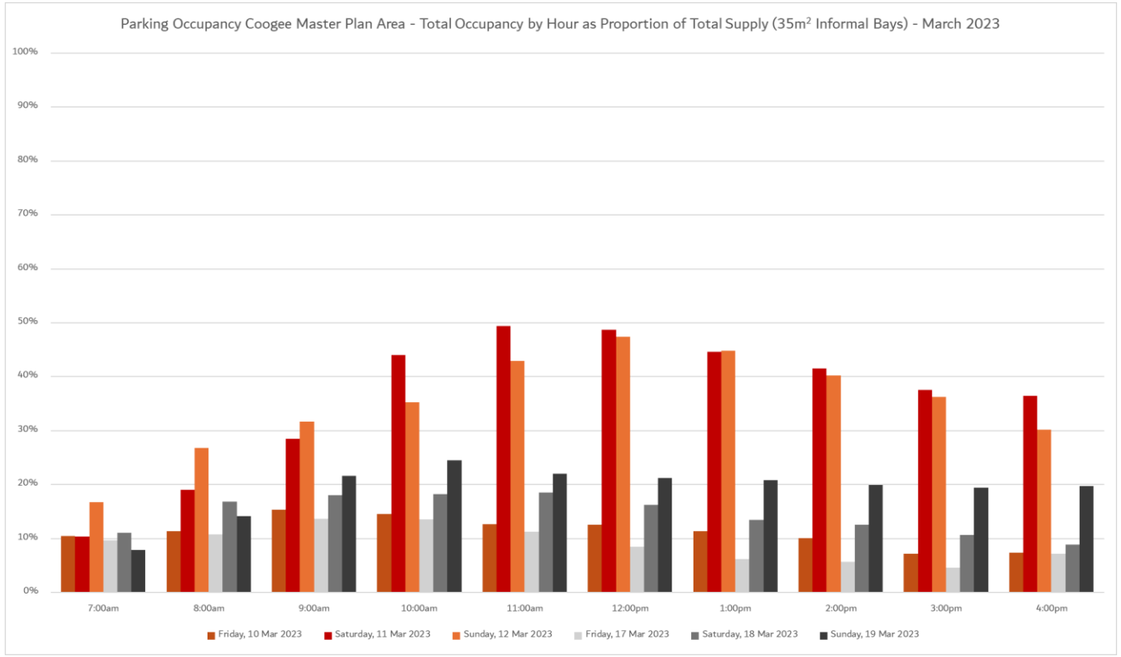


Figure 39 Parking occupancy by day March 2023 Coogee Live surveys as a proportion of overall supply (35m² informal bays)

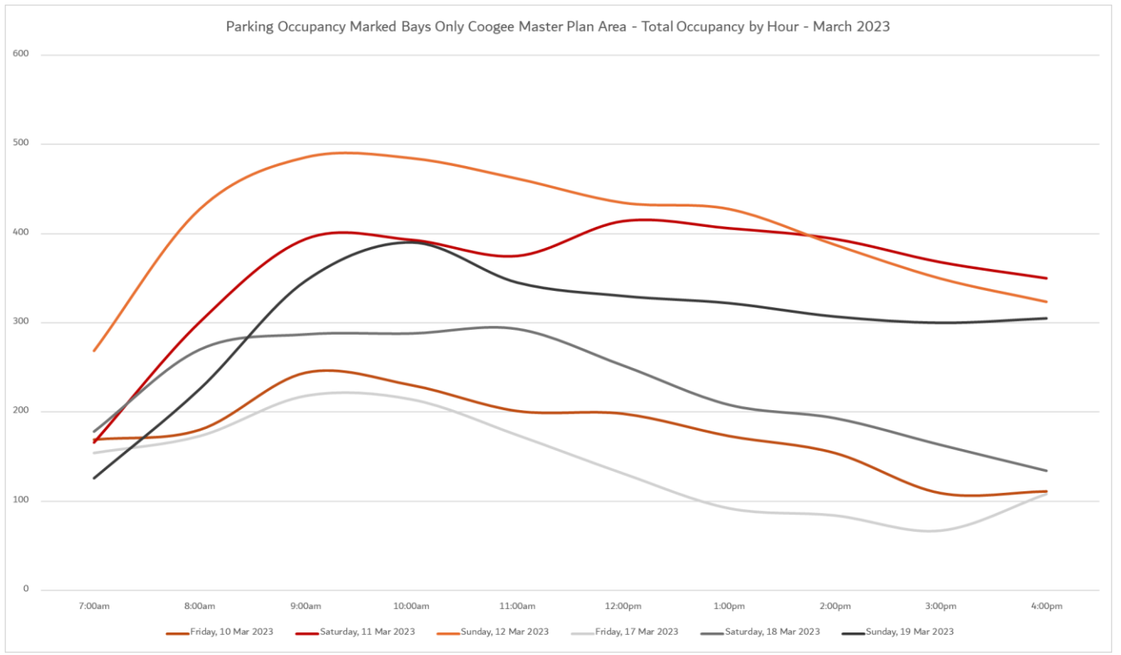


Figure 40 Parking occupancy per day marked bays only - March 2023 Coogee Live surveys (source: CoC)

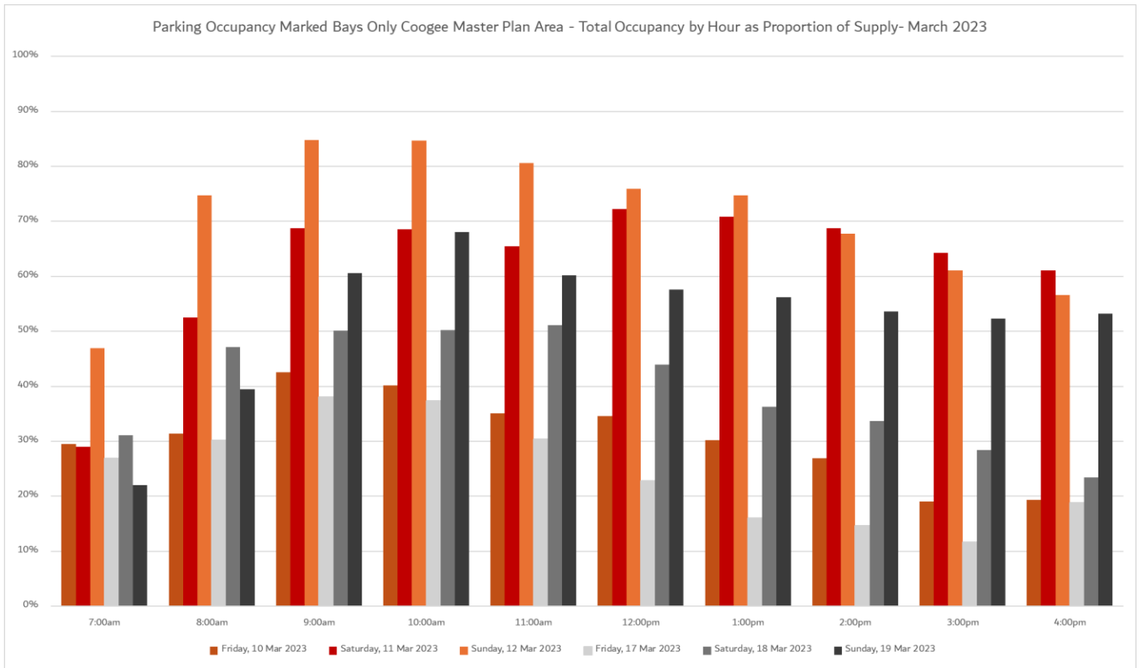


Figure 41 Parking occupancy by day marked bays only March 2023 Coogee Live surveys as a proportion of supply

To supplement the 2023 information, occupancy surveys were undertaken at peak times during the school holiday period in January 2024. There were eleven separate spot occupancy surveys completed from Thursday to Sunday to cover peak usage times indicated from other data, with Coogee Common not included in the spot surveys. The overall occupancy volumes are shown in Figure 42 and the proportion of bays or space occupied is shown in Figure 43.

The highest recorded volumes of occupancy was on Sunday morning at 10.00am, where 581 marked bays were occupied (or double-parked) and 133 informal vehicles recorded. This indicates a 102% occupancy of marked bays which reflects vehicles using the bus bay area north of Powell Road, double parking or recorded as being on a verge area in the bays surveyed or dwelling illegally in a no-stopping area.

Location	Bays / Size (est.)	30m² ave.	35m² ave.	Thurs 11.00am	Thurs 12.30pm	Thurs 3.30pm	Fri 8.30am	Fri 10.30am	Sat 8.00am	Sat 12 Noon	Sat 3.30pm	Sun 8.00am	Sun 10.00am	Sun Noon
Perlinte View	41	-	-	21	27	12	36	24	41	41	31	41	41	41
Car Parks (N of Powell)	119	-	-	114	104	38	71	101	119	123	124	118	127	118
Car Parks (S of Powell)	124	-	-	94	79	30	45	52	116	125	128	106	131	128
Car Parks off Poore Grove	283	-	-	101	94	26	95	78	159	157	154	184	282	225
Powell St	990 m²	33	28	9	6	1	4	5	10	35	31	16	38	27
Beach St	640 m²	21	18	2	6	6	2	0	2	11	12	4	12	9
West Verge Cockburn	680 m²	23	19	1	1	1	0	1	1	1	1	1	3	4
East Verge	10,060 m²	335	287	4	2	0	0	0	0	17	18	4	20	15
Amity (E of Cockburn)	5,800 m²	193	166	0	0	0	0	0	0	7	6	5	4	2
Amity (W of Cockburn)	1,180 m²	39	34	0	0	0	0	0	0	6	4	0	5	6
Poore Grove (E of Cockburn)	8,600 m²	287	246	0	0	0	0	0	0	0	0	0	44	24
Poore Grove (W of Cockburn)	1,400 m²	47	40	0	0	0	0	0	0	2	2	3	7	6

Figure 42 Parking occupancy spot survey results - January 2024

Location	Bays / Size (est.)	30m² ave.	35m² ave.	Thurs 11.00am	Thurs 12.30pm	Thurs 3.30pm	Fri 8.30am	Fri 10.30am	Sat 8.00am	Sat 12 Noon	Sat 3.30pm	Sun 8.00am	Sun 10.00am	Sun Noon
Perlinte View	41	-	-	51%	66%	29%	88%	59%	100%	100%	76%	100%	100%	100%
Car Parks (N of Powell)	119	-	-	96%	87%	32%	60%	85%	100%	103%	104%	99%	107%	99%
Car Parks (S of Powell)	124	-	-	76%	64%	24%	36%	42%	94%	101%	103%	85%	106%	103%
Car Parks off Poore Grove	283	-	-	36%	33%	9%	34%	28%	56%	55%	54%	65%	100%	80%
Powell St	990 m²	33	28	32%	21%	4%	14%	18%	36%	125%	111%	57%	136%	96%
Beach St	640 m²	21	18	11%	33%	33%	11%	0%	11%	61%	67%	22%	67%	50%
West Verge Cockburn	680 m²	23	19	5%	5%	5%	0%	5%	5%	5%	5%	5%	16%	21%
East Verge	10,060 m²	335	287	1%	1%	0%	0%	0%	0%	6%	6%	1%	7%	5%
Amity (E of Cockburn)	5,800 m²	193	166	0%	0%	0%	0%	0%	0%	4%	4%	3%	2%	1%
Amity (W of Cockburn)	1,180 m²	39	34	0%	0%	0%	0%	0%	0%	18%	12%	0%	15%	18%
Poore Grove (E of Cockburn)	8,600 m²	287	246	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	10%
Poore Grove (W of Cockburn)	1,400 m²	47	40	0%	0%	0%	0%	0%	0%	5%	5%	8%	18%	15%

Figure 43 Parking occupancy spot survey - usage proportions marked bays and 35m² per informal vehicle – January 2024

The total recorded number of vehicles for the Sunday morning, 714, represents a total occupancy which was:

- Higher than the combined volumes observed from historical aerial images
- Lower than the total volumes observed for the Australia Day event in 2023 (northern end and assumed southern end)
- Lower than the Coogee Live event in March 2023 for both the Saturday and Sunday in March 2023.

Based on the range of data, parking demands are highest for the events at Coogee Beach. A typical summers weekend day during the school holiday season would see similar levels of parking, and this may also be higher if localised events, such as nippers, was on at the Surf Lifesaving club where there would be a higher uptake of informal parking around Poore Grove and Amity Boulevard.

Given the data available, demands for a typical weekend day during summer holidays at peak would be around 750 vehicles and for events it would be around 850 vehicles.

5. PEDESTRIAN AND BIKE RIDING NETWORKS

5.1 Introduction

Pedestrian and cycling network connections are a key component of a recreational reserve such as Coogee Beach. Irrespective of what mode is taken to access the master plan area, the last part of the trip is generally undertaken on foot or requires pathways and connections that allow for strollers, mobility aides, bicycles and other wheeled devices to be provided for.

Footpath connections in the master plan area that are assets of the CoC are shown in Figure 4. The broader network is a combination of existing and planned connections which are examined in this section.

5.2 Wider Area Bicyclist Network

The existing wider area bicycling network is mapped out by the DoT. Although the network mapping is over seven years old, the general configuration of the network and the connections available are largely the same. The existing DoT mapping for the project area is shown in Figure 44. This mapping is also replicated within CoC mapping.

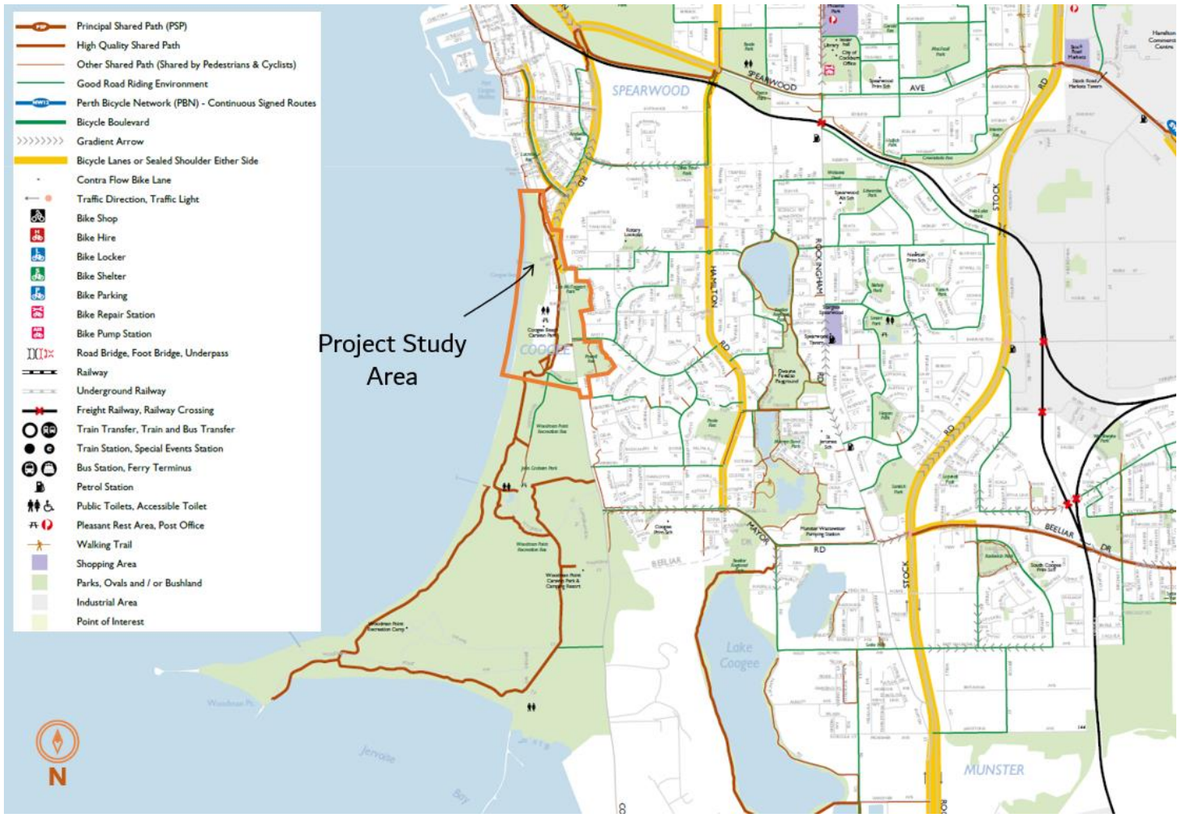


Figure 44 DoT cycling maps for Coogee area (source: DoT)

In 2017, the Bicycle and Walking Network Plan was completed for the CoC and was relevant for a five year period between 2016-2021. That plan set out existing and proposed future routes to be delivered within and beyond the period of the plan.

The overall network relevant to the Coogee Beach area is shown in Figure 45. The existing and future routes largely reflect the existing mapping of DoT, including east-west local routes (meaning generally limited to no actual dedicated infrastructure but seen a "good" cycling connections) along connections such as Amity Boulevard and King Street. The existing path network infrastructure through Port Coogee and Woodman Point to the south is also reflected in the plan.

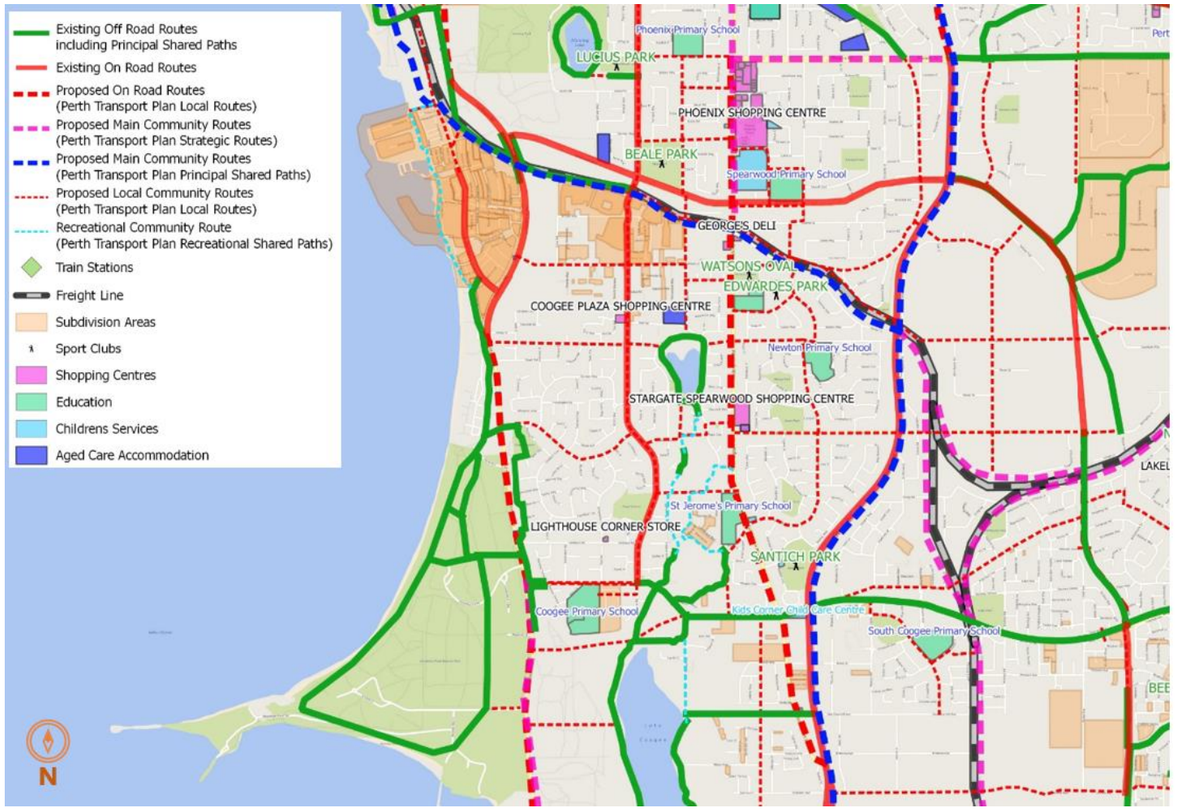


Figure 45 Bicycle and Walking Network Plan – existing and proposed routes (source: CoC)

Subsequent to the local bicyclist network planning, the DoT undertook the development of the Long Term Cycling Network (LTCN) plan which covers the entire Perth Metropolitan Region, including the CoC. The LTCN sets out an agreed network which allows for the development of local and strategic bicycling links.

The network, relevant to the Coogee Beach area, is set out in Figure 46. Within the study area, this largely retains the existing network connections – with the main north-south route retained and the local east-west local routes into the area being Amity Boulevard and Ocean Road. The alignment of Beeliar Drive and Mayor Road is seen as the primary east-west route which connects through to Cockburn Central.

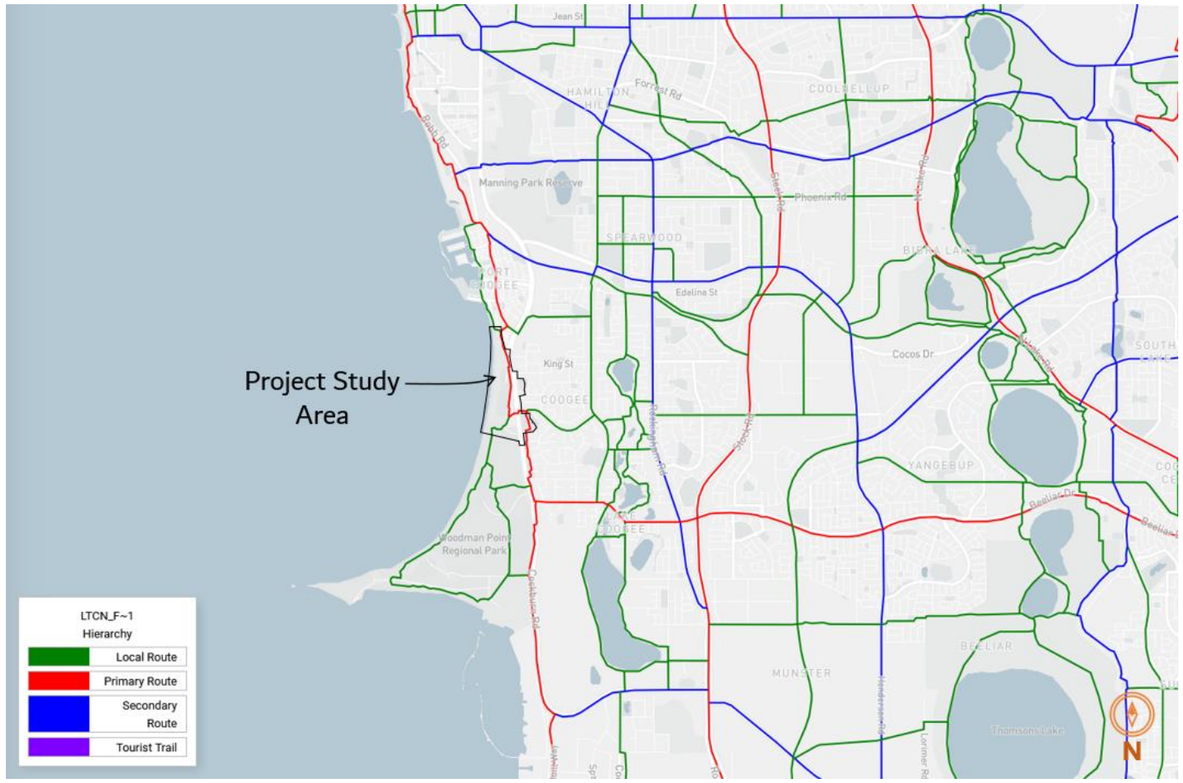


Figure 46 Long Term Cycling Network map (source: Planwisely)

Using the future LTCN as the base, a 20-minute cycling catchment was assessed within Planwisely. This provides an understanding of the catchment area within a short or comfortable ride to the beach. The café on Powell Road was used as the base point. The catchment area extends further north-south than east-west, largely owing to the existence of a legible path network heading towards Fremantle and south through Woodman Point. The east-west catchment reaches areas around Stock Road.

Most of Coogee and Lake Coogee are covered by the catchment area, although it should be noted that there are significant areas of local and regional reserves, as well as some non-residential land uses.

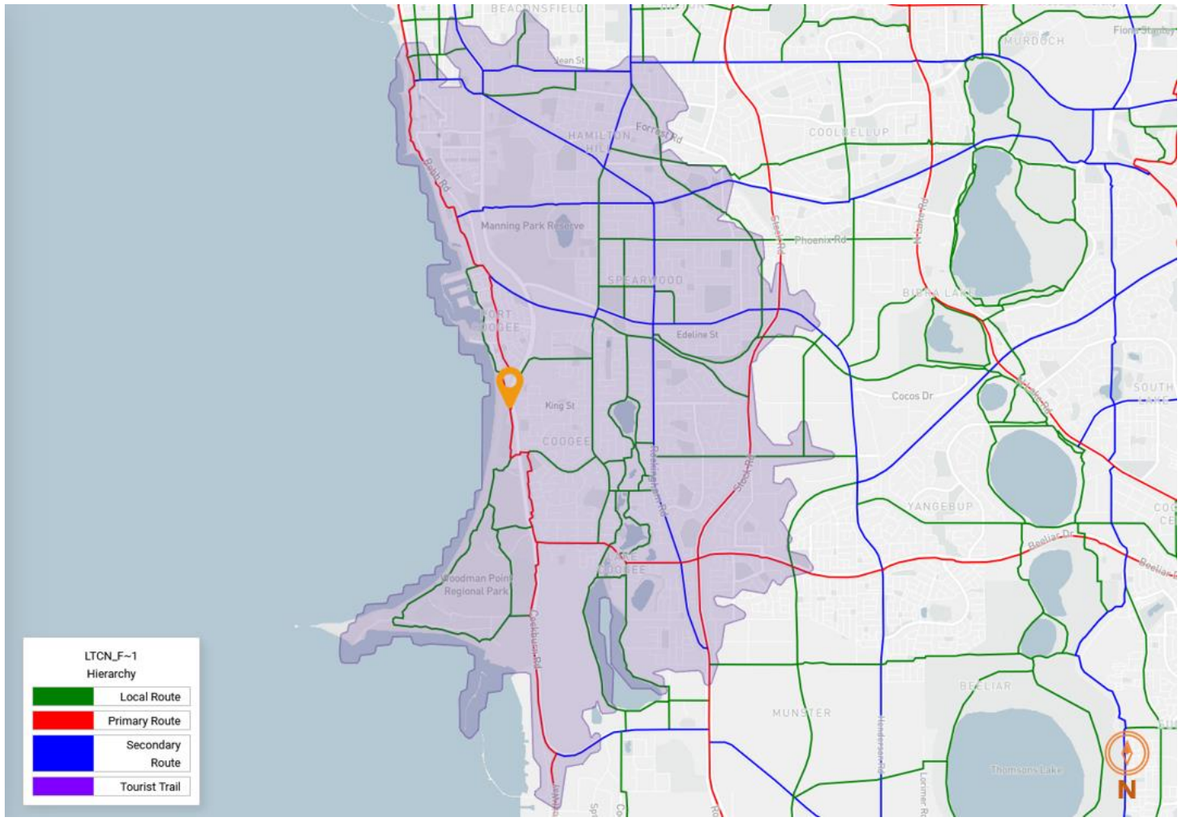


Figure 47 20 minute cycling catchment to Coogee Beach (source: Planwisely)

In general, the existing network through the master plan area is comprised of relatively disjointed paths that would be considered to be lower quality in most areas and not of the form or function that constitutes an attractive or safe network for all users. Critical to this is the lack of continuous and safe connections through the Perlinte View (Peri End) and Powell Road areas, as well as connections over Cockburn Road.

At Powell Road, the shared path from the south connects only through using a short, 1.8m wide concrete stub and then crossing near the intersection of Cockburn Road. The approaches are shown in Figure 48 and Figure 49 with the route for pedestrians and cyclists shown in Figure 50. There is no priority, no refuge, no clear indication of the route and during peak times, the movement of vehicles into and out of Powell Road from Cockburn Road renders the connection unsafe or dangerous for most users. Given this is the main north-south connection, most cyclists through the area were observed using the car parks and mingling with traffic and considered that to be a safer, more legible route. For pedestrians, no such alternative exists.

Figure 48 Shared path looking south from Powell Road (source: Google)

Figure 49 Shared path looking north from Powell Road (source: Google)

Figure 50 Bicyclist and pedestrian route through Powell Road intersection (source: Metromap)

At the northern end of the master plan area near Perlinte View, the access stub into the car park area sees the path connecting over the road carriageway. There is no priority for pedestrians and bicyclists and limitations in visibility on approaches means that people were observed frequently turning off the path and walking or cycling along the carriageway to access the beach area path rather than take the longer, slightly indirect route.

The crossing of this area is shown in Figure 51 and Figure 52.

Within the southern area of the master plan, the path crossings of the Poore Grove carriageway and car park access areas are all priority controlled through zebra marked crossing or a raised wombat crossing, as shown in Figure 53 Figure 54. These areas are not public roads and therefore the constraints over using them are not controlled through Main Roads WA. This form of priority reinforces the nature of the area having large amounts of foot traffic and also assists in reducing speeds.

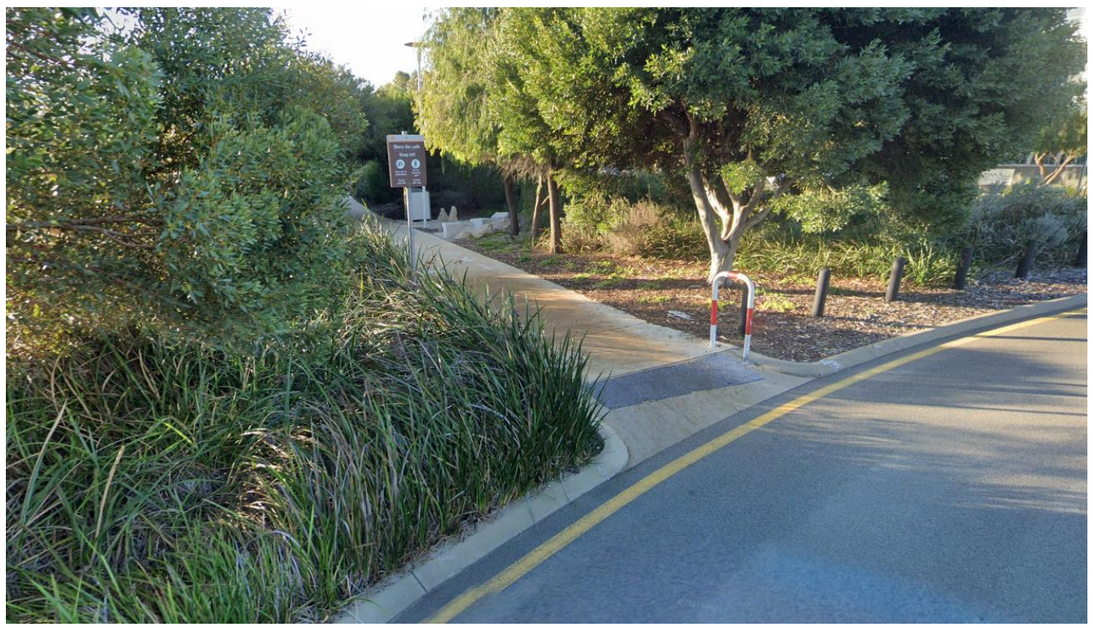


Figure 51 Path connection into Perlinte View path looking north (source: Google)

Figure 52 Path connection from Perlinte View path looking south (source: Google)

Figure 53 Pedestrian zebra crossing - Poore Grove (source: Flyt)

Figure 54 Path connection near Surf Lifesaving club (source: Flyt)

6. PUBLIC TRANSPORT

6.1 Introduction

The master plan area is presently served by Transperth buses. The site is located away from the existing passenger rail network, being around 8km from Fremantle Station and 11km from Cockburn Central Station. The area scores lowly on commercial based transport accessibility measurements (such as Walkscore) and its relative isolation from major regional centres or activity centres means that it is poorly served under the hub and spoke network that Transperth operates.

6.2 Existing Public Transport Provision

The master plan area currently has direct access to bus stops for the 548 service that operates between Rockingham and Fremantle Stations on a daily basis and the 512 service which connects Fremantle and Murdoch Stations. The route map for the 548 service and the location of bus stops on Cockburn Road and Orsino Boulevard adjacent to the master plan area are shown in Figure 55 with the route map for the 512 service shown in Figure 56.

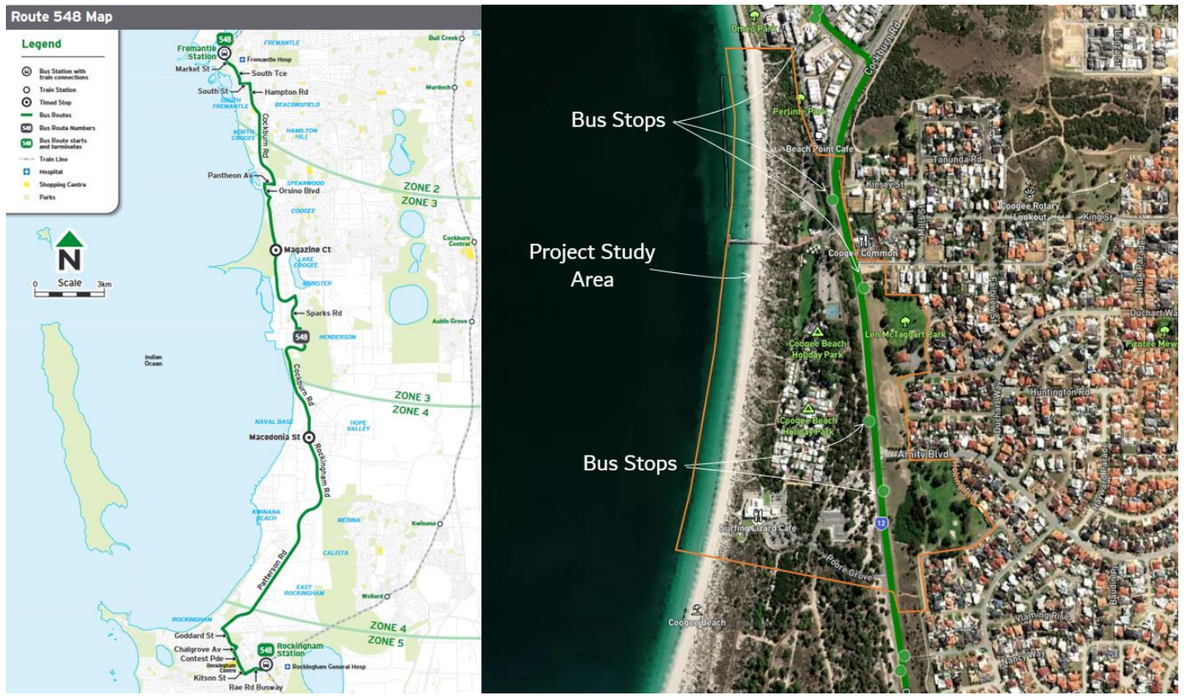


Figure 55 Route 548 and local bus stops (sources: Transperth and Planwisely)

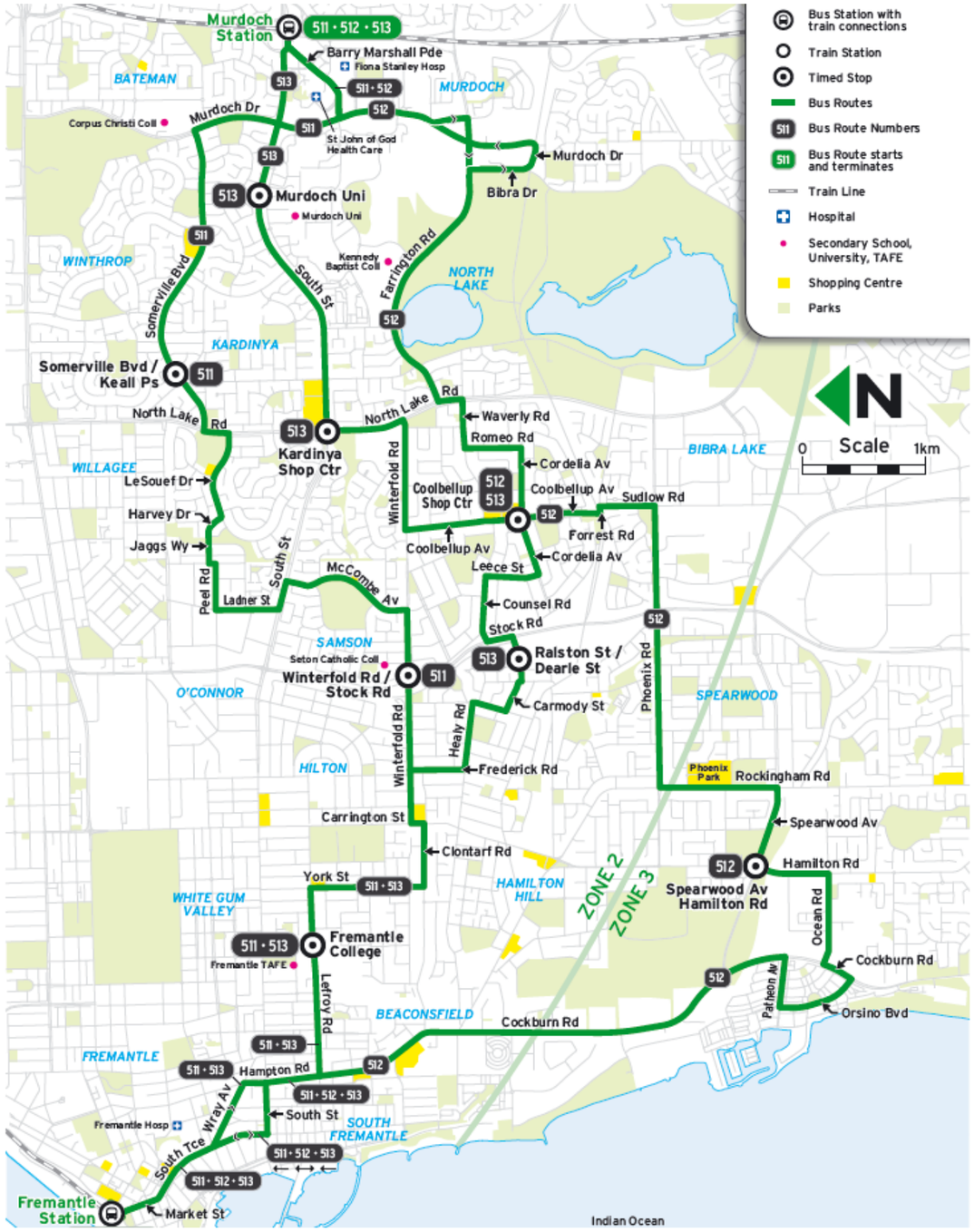


Figure 56 512 route map (source: Transperth)

Catchment mapping for the master plan area was undertaken in Planwisely to understand what coverage there would be for journeys undertaken during the peak visitation times – with the focus being on Sunday mornings given that is peak occupancy time for parking in the area. The catchment for a 60 trip by public transport, including the walk component, is shown in Figure 57.

This shows a catchment that extends across to the Kwinana Freeway corridor and also extends along destination along the Fremantle rail line, given the interchange to bus would be at Fremantle Station. This catchment area may be deceptive in that the first 548 bus on a Sunday departs for Fremantle Station at 9.15am and this catchment may also contain walk connections to routes heading east or connections via the 512 route after walking to Spearwood.

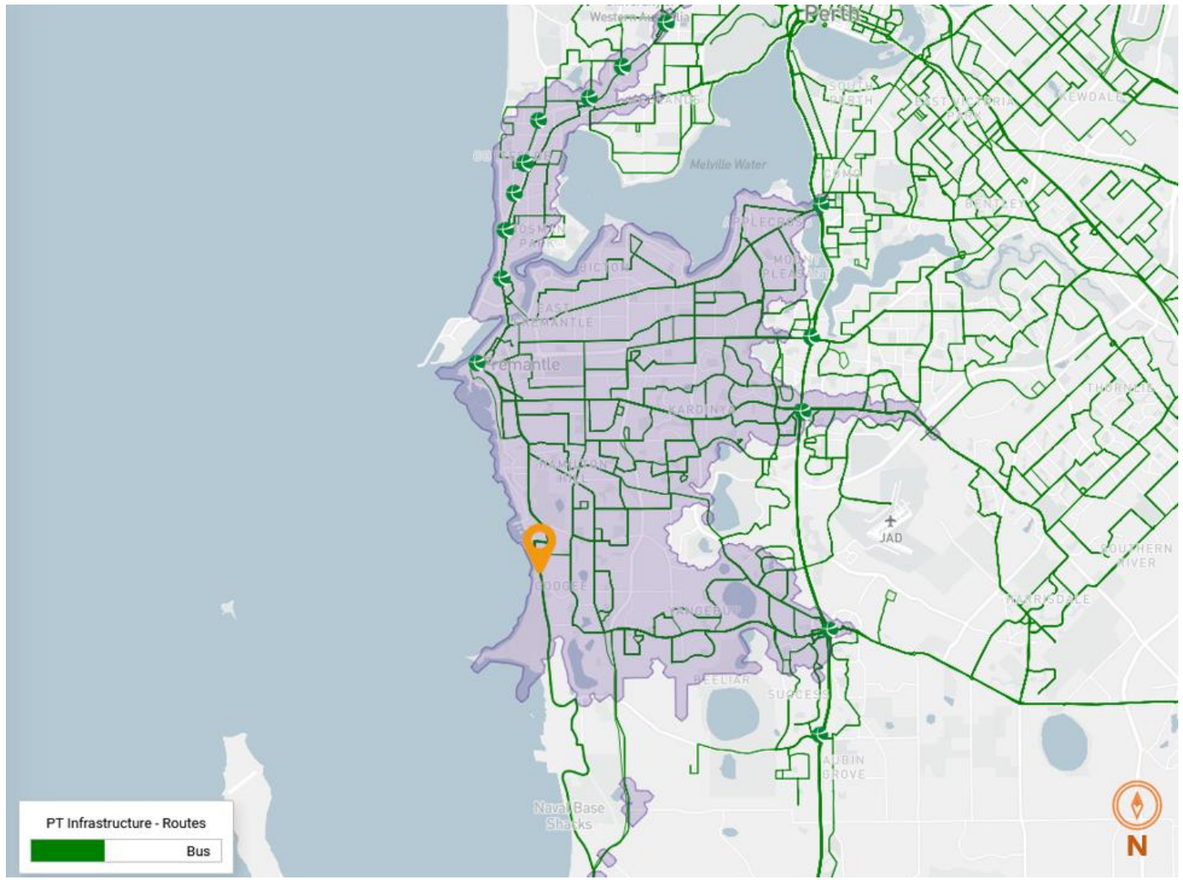


Figure 57 60 minute public transport catchment – Sunday 8.30am (source: Planwisely)

In reality, the area has very limited public transport access which in part is driven by the fact that the catchment is very spread out, has limited access to activity centres and trip generating land uses and the frequency and timing of trip generation along the route is non-standard compared to the majority of the network (key trip generating land uses at AMC Henderson and Coogee Beach have peaks outside of traditional peaks).

On a weekday for the 548 bus, there are 21 services in each direction passing the master plan area and day time frequencies are typically an hour. On Saturdays, there are eight services in each direction that run hourly from around 9.00am and on Sundays and Public Holidays, there are eight services in each direction that run hourly. These services terminate south of the master plan area and do not extend through to Rockingham.

For the 512 service that has stops on Orsino Boulevard at the northern end of the master plan area, there are 30 services running weekdays, 14 on Saturdays and 12 on Sundays. Weekend services do not connect at Fremantle Station, instead they terminate at Spearwood meaning that they do not provide a service for the master plan area.

6.3 Bus Stop Access

The bus stops that serve the master plan area are located on Cockburn Road or Orsino Boulevard. At the southern end of the master plan area, there are bus stops providing access from both directions near Amity Boulevard. The stops, as shown in Figure 58 are located around 360-370m from the entrance to the café on site. The southbound stop requires crossing of Cockburn Road using a 1.8m wide refuge island on near the intersection of Amity Boulevard. The northbound stop has a shelter whereas the southbound stop is an info pole and a seat with no shade.

Figure 58 Bus stops on Cockburn Road near Amity Boulevard (source: Metromap)

At the northern end, there are stops near the intersection of Powell Road and Cockburn Road, both of which are embayed stops as shown in Figure 59.

The northbound stop has a shelter however the southbound stop is a seat and info pole. The southbound stop requires crossing of Cockburn Road and Beach Road. New traffic signals on Cockburn Road will provide a higher level of accessibility. Access from the stops to the beach area includes traversing Powell Road or walking through car park areas and accessways to get to the footpath network.

Figure 59 Bus stops on Cockburn Road near Powell Road (source: Metromap)

7. BASE NETWORK ASSESSMENT

7.1 Assessment Introduction

In order to inform the master plan progression and treatment of the surrounding street network, analysis of the base year traffic impacts have been undertaken. This level of analysis covers the detailed information required to understand traffic implications for the site. Assessment completed comprised of the following:

- Review of previous levels of assessment undertaken for the CBLMP, including intersection configuration and outputs from SIDRA modelling
- Completion of site traffic data collection for the network to supplement the other data sources collected as described in section 2, including turning movements during peak periods
- Review of information from Main Roads TrafficMap, including all count, heavy vehicle and speed data for use
- Development of 2020 Base Year site and network models using Main Roads WA parameters for the AM and PM peak hour in SIDRA Intersection 9.1 and data from the 2020 CBLMP report
- Development of Saturday 2024 AM peak hour model and a Saturday early afternoon PM model using Main Roads WA parameters in SIDRA Intersection 9.1.

All SIDRA outputs are included within Appendix A. The purpose of this assessment at this stage is to establish the appropriate baseline assessment for the master planning exercise in late 2024. The additional peak for the Saturday was to test the peak in and out movements from the project area during the busier holiday periods. This would mean that the three "peak" scenarios would be covered – weekday commuting period and then weekend periods when demands are higher on the network. The Saturday demands have been used rather than Sunday given that peak parking demand during holiday periods can be the same for either weekend day, but typically the background volumes on the network are higher – thus the Saturday is a more conservative scenario to test.

7.2 Modelling Timeframes and Network

Network modelling has been undertaken in SIDRA Intersection 9.1 Plus version 9.1.1.200 for the following periods:

- AM 2020 Base Peak Hour (replicating the CBLMP project for consistency with Poore Grove added in)
- PM 2020 Base Peak Hour (replicating the CBLMP project for consistency with Poore Grove added in)
- Saturday AM Peak Hour (2024)
- Saturday PM Peak Hour (2024).

The layout of the base network modelled is shown in Figure 60 and the 2024 scenario remained the same given that the pedestrian signalised crossing point north of Beach Poad was yet to be installed. When the forecast year networks are tested, that crossing point will be included within the network.

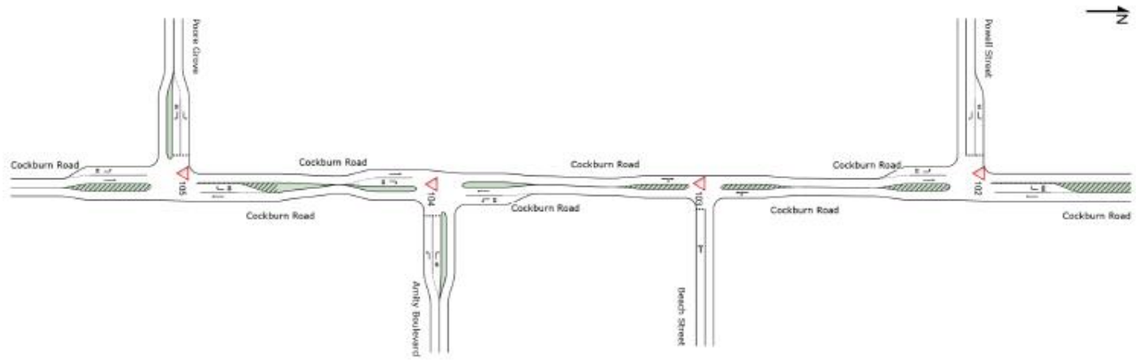


Figure 60 SIDRA Network – 2023 Base Models

7.3 Assessment – CBLMP Replication

The base year (2020) AM and PM weekday peak hour traffic volumes for the network were extracted from the CBLMP project report. These were then used within SIDRA 9.1 to obtain outputs from which the forecast year testing can be undertaken.

In addition to the CBLMP network, Poore Grove was added in using the 2024 observations factored back to 2020 levels. This just allowed for consistency across the forecast year scenarios. For consistency with forecast year scenarios, the intersections along Cockburn Road were modelled as single T-Intersection movements rather than a Stage 1 and Stage 2 to understand the existing scenario, rather than model a scenario that has a wider median in situ. This provides a more realistic assessment outcome.

The movement flows for the approach roads at intersections are shown for the 2020 AM and PM peak hours in Figure 61. Level of Service (LoS) and Degree of Saturation (DoS) outputs for the respective peak hours are shown in Figure 62 and Figure 63. These outputs show that all through movements and turning movements along Cockburn Road are performing at a high level and the Primary Regional Road corridor is not suffering from capacity constraints.

Turning movements into Cockburn Road have a number of failures based on traffic engineering metrics, in particular right hand turn movements which demand higher gap acceptance factors to safely complete turns. Powell Road and Amity Boulevard struggle to cater for right hand turning demands during the morning peak hour, and Powell Road, Amity Boulevard and Poore Grove all struggle to process demands for right turning movements in the PM peak.

It is clear from these general outcomes that the faster through movements, combined with the level of turning vehicles, is causing existing issues for vehicles during peak hours. Limited breaks in traffic and higher volumes of continuously flowing vehicles are impacting turning movements, with the impact on any pedestrian movements trying to cross the corridor being unreported but likely to be substantial.

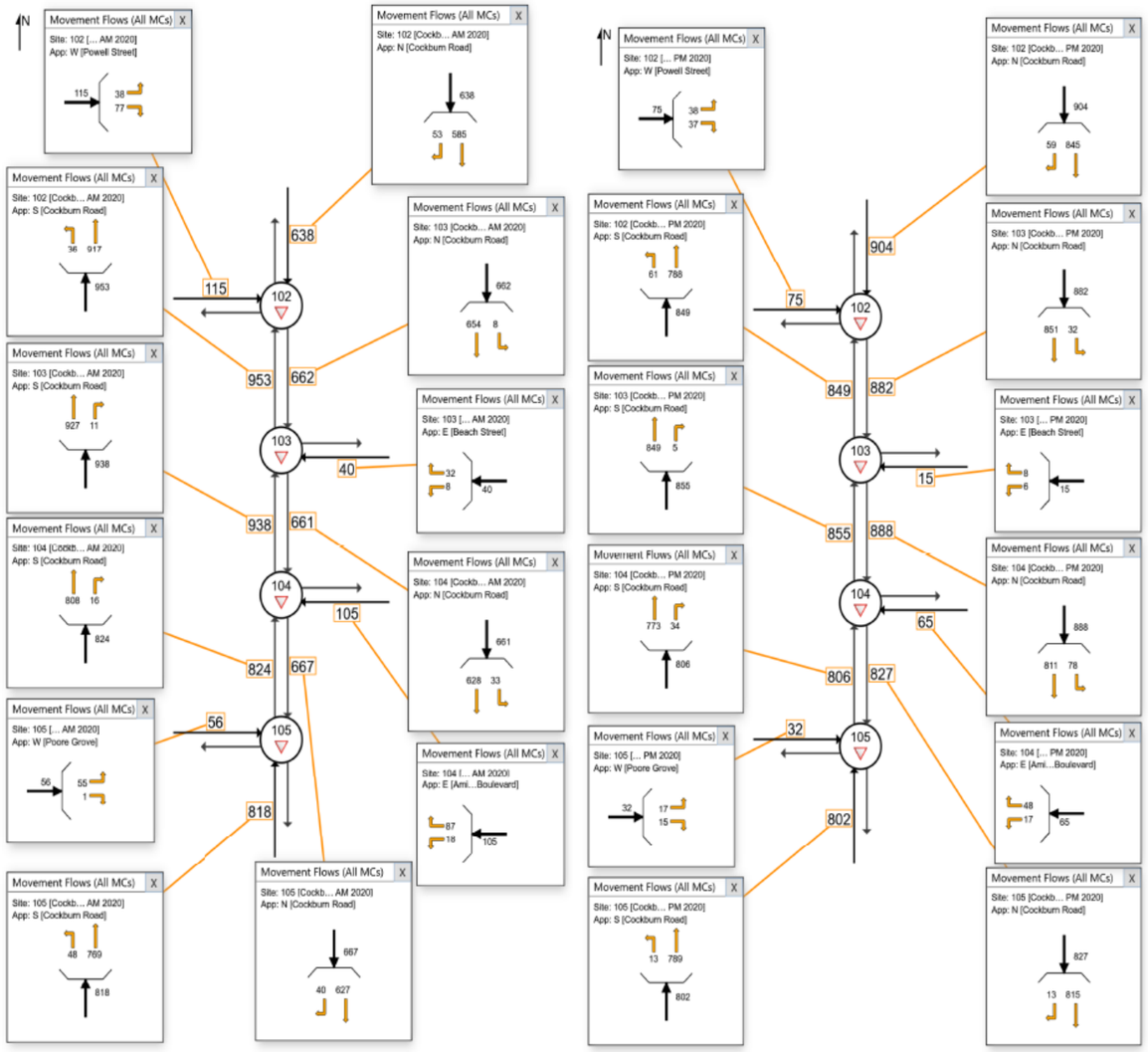


Figure 61 Movement flows 2020 – AM (left) and PM (right)

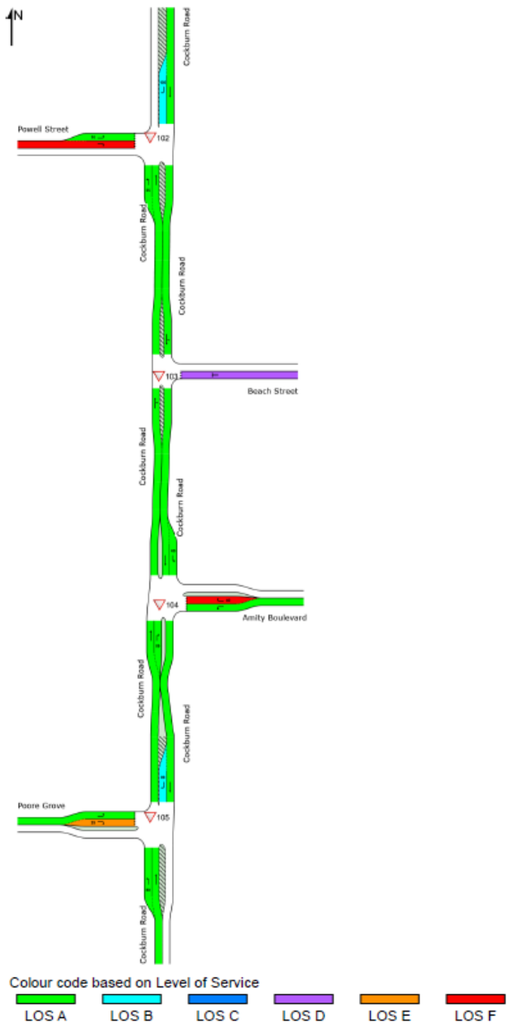
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2020 AM Network (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [2020 AM Network (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

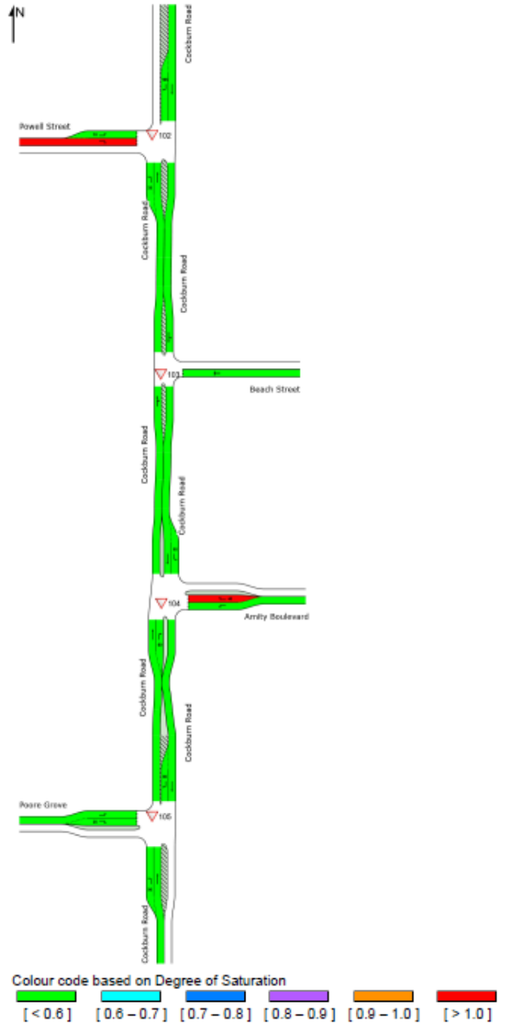


Figure 62 Network LOS and DOS 2020 AM base network model

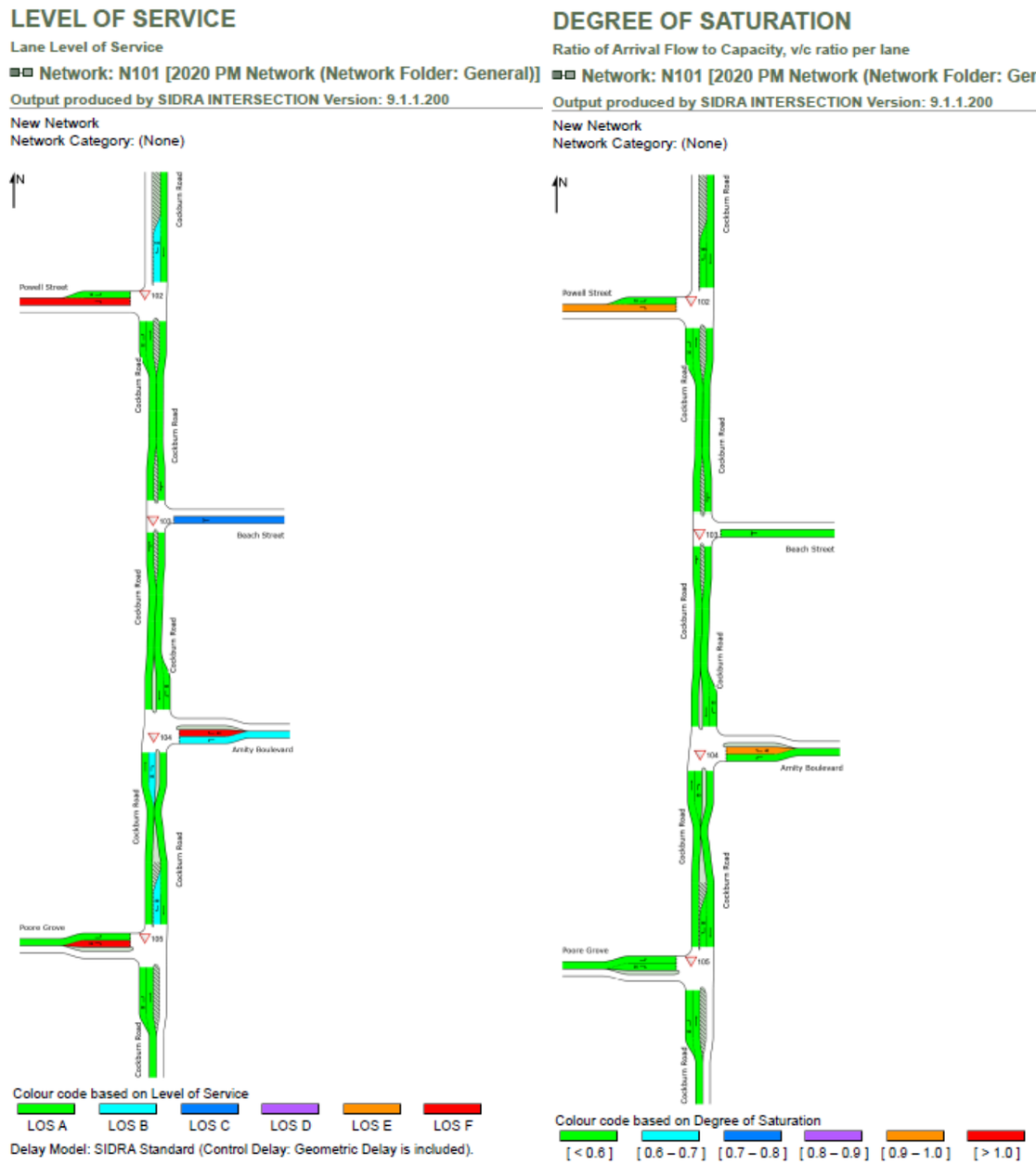


Figure 63 Network LOS and DOS 2020 PM base network model

7.4 Model Outcomes – 2024 Saturday

The modelling of the Saturday peak scenarios allows for the examination of issues specific to peak flows into and out of side roads and to understand what variances there are between peak weekday scenarios and peak weekend vehicle movements.

The movement flows for the approach roads at intersections are shown for the 2024 Saturday AM and PM peak hours in Figure 64. Level of Service (LoS) and Degree of Saturation (DoS) outputs for the respective peak hours on Saturday which capture the inbound and outbound demands are shown in Figure 65 and Figure 66.

Immediately the differences between the weekday peak periods modelled and the weekend peaks are evident. With a much lower level of through traffic, the turning movements into Cockburn Road do not reflect significantly poor traffic engineering metrics, with only Powell Road and Amity Boulevard registering noticeable delays for right hand turning movements.

These outcomes may not necessarily reflect what some drivers experience "on the ground", especially with turning movements out of Powell Road being noticeably delayed through on-site observations. This is because the metrics are based over 15 minute and one-hour periods and the average of the delays is less than during normal weekday conditions. For the right hand turn movements, the flow of traffic from the south (which is unconstrained) is much less on the weekends and therefore does not impact turning traffic as much.

Based on these outcomes, it would be prudent to continue to model the Saturday period in the master plan exercise to understand if there are any differences in scenarios that would impact overall network function. In addition, the installation of traffic signals for pedestrians on Cockburn Road will introduce a different dynamic in gaps being available and this should be considered for all peak periods.

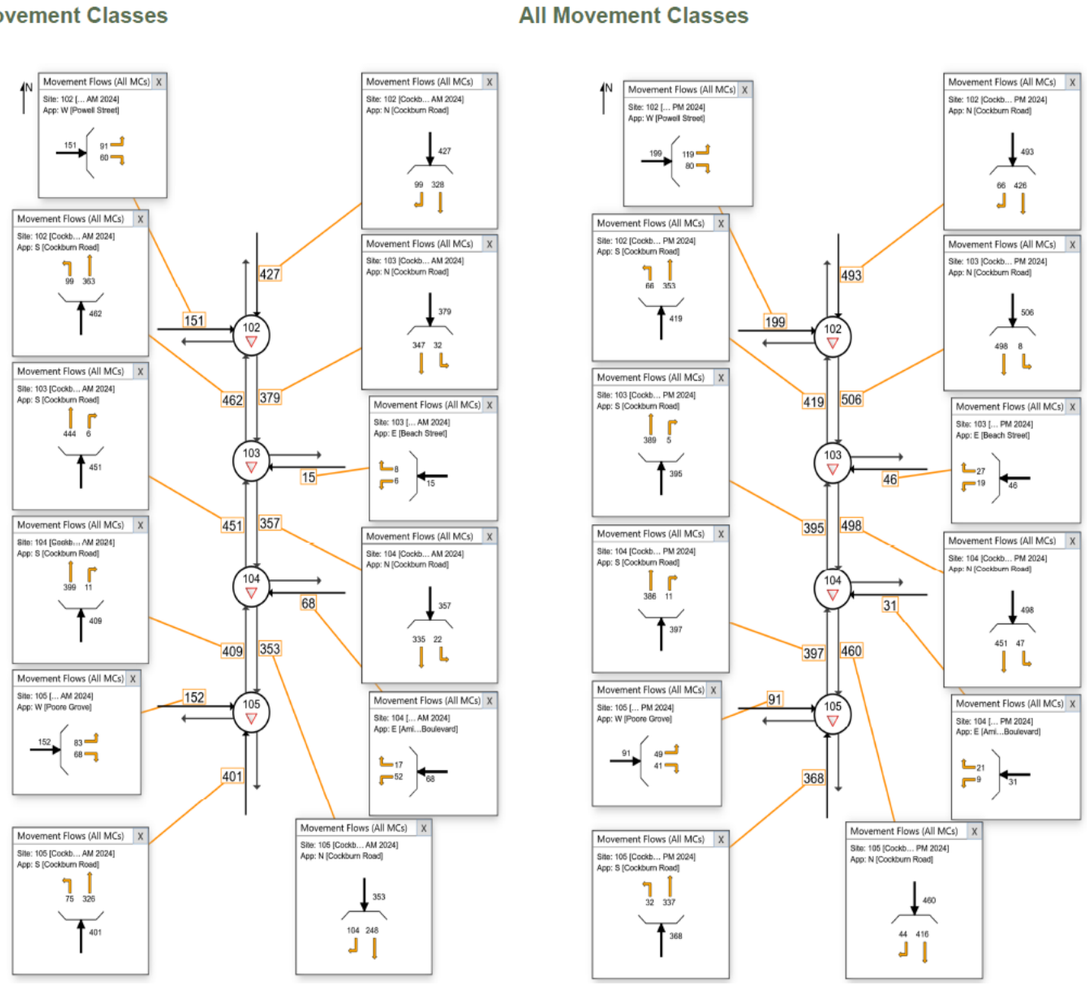


Figure 64 Movement flows Saturday 2024 – AM (left) and PM (right)

Figure 65 Network LOS and DOS 2024 Saturday AM base network model

LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2024 Saturday PM (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [2024 Saturday PM (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

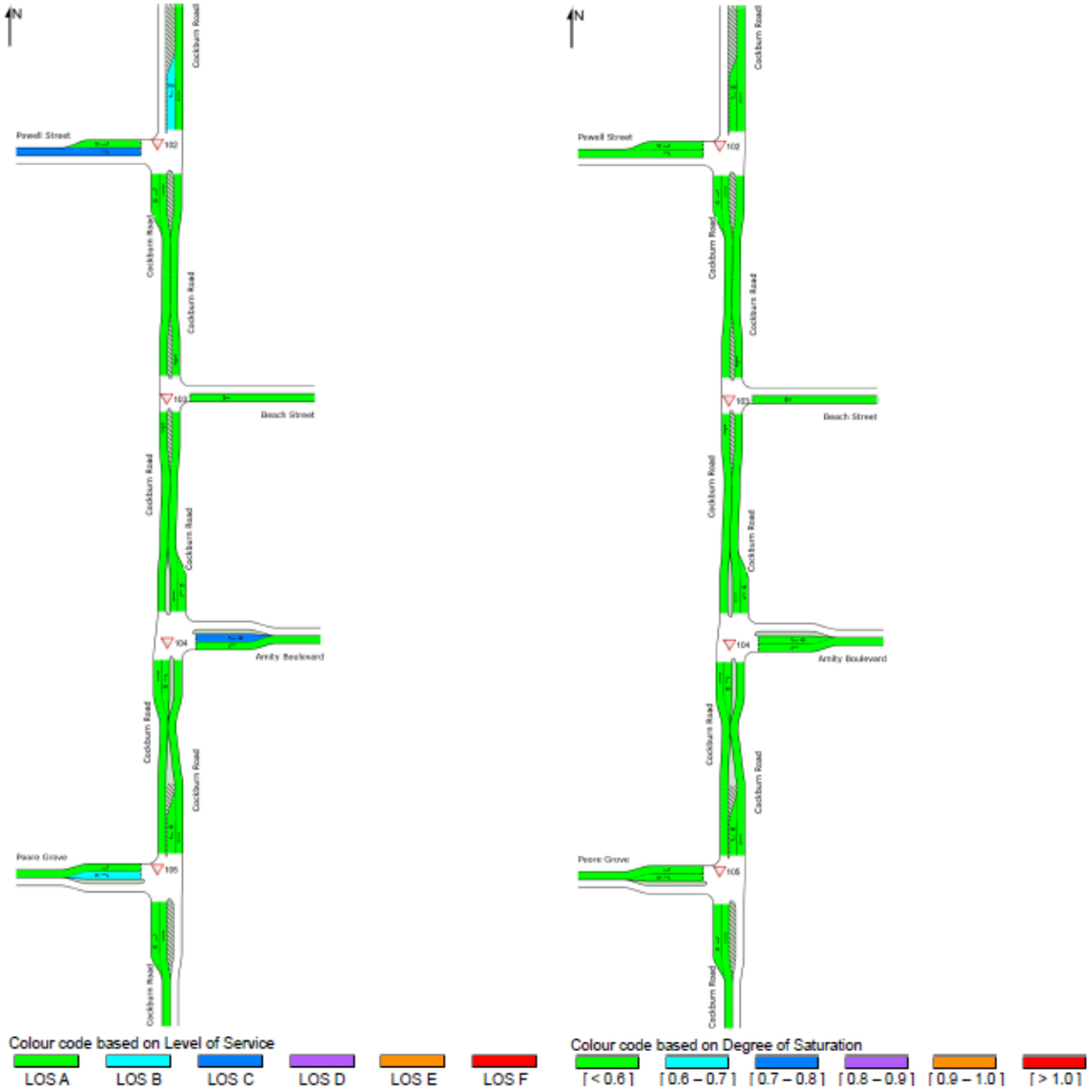


Figure 66 Network LOS and DOS 2024 Saturday PM base network model

APPENDIX A

SIDRA Outputs

MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [2020 AM Network (Network Folder: General)]

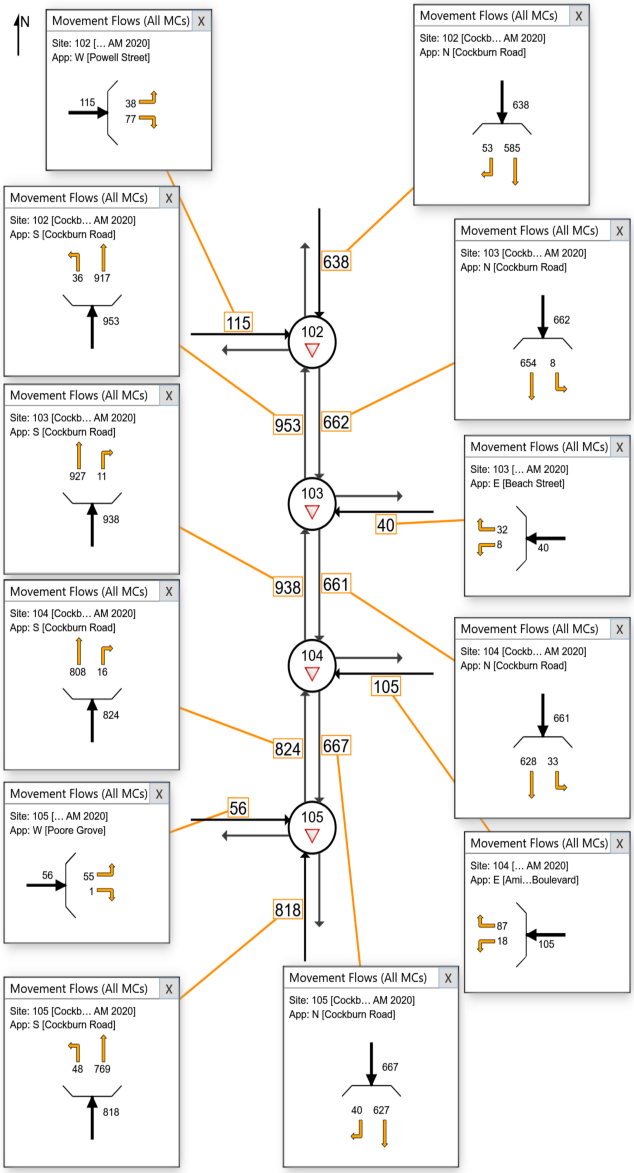
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes



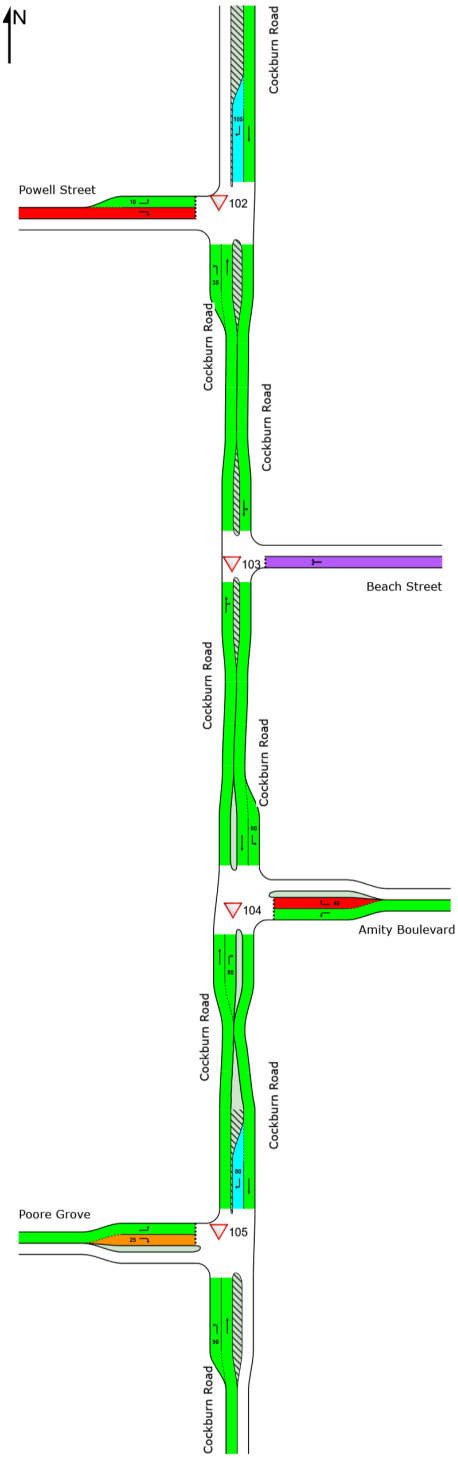
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2020 AM Network (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

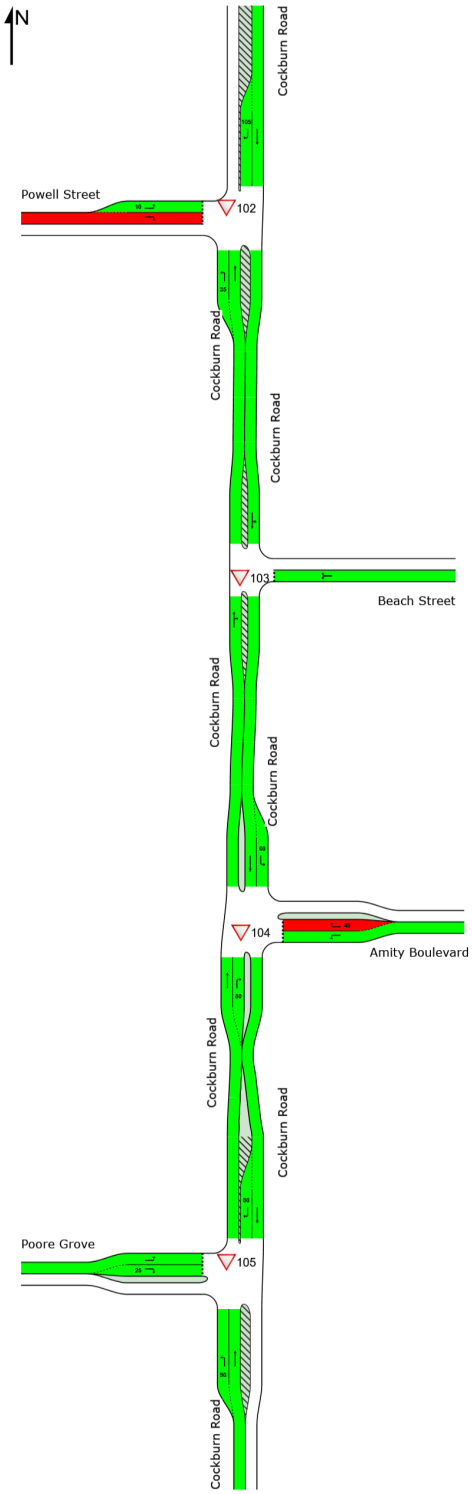
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [2020 AM Network (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

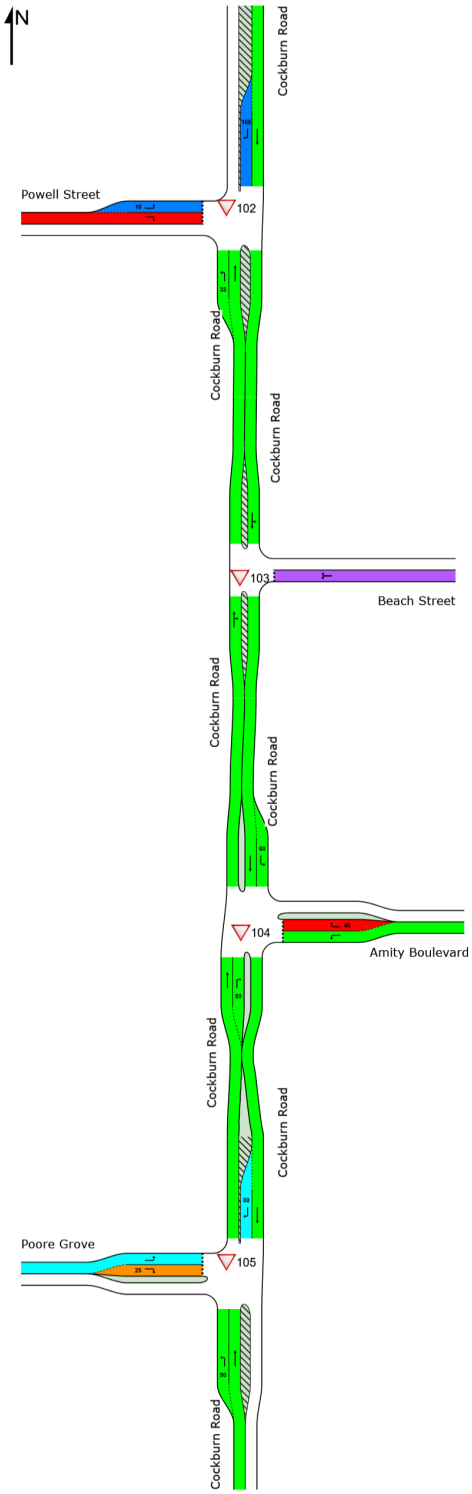
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [2020 AM Network (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Proportion Queued

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 0.99] [1.0]

MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [2020 AM Network (Network Folder: General)]

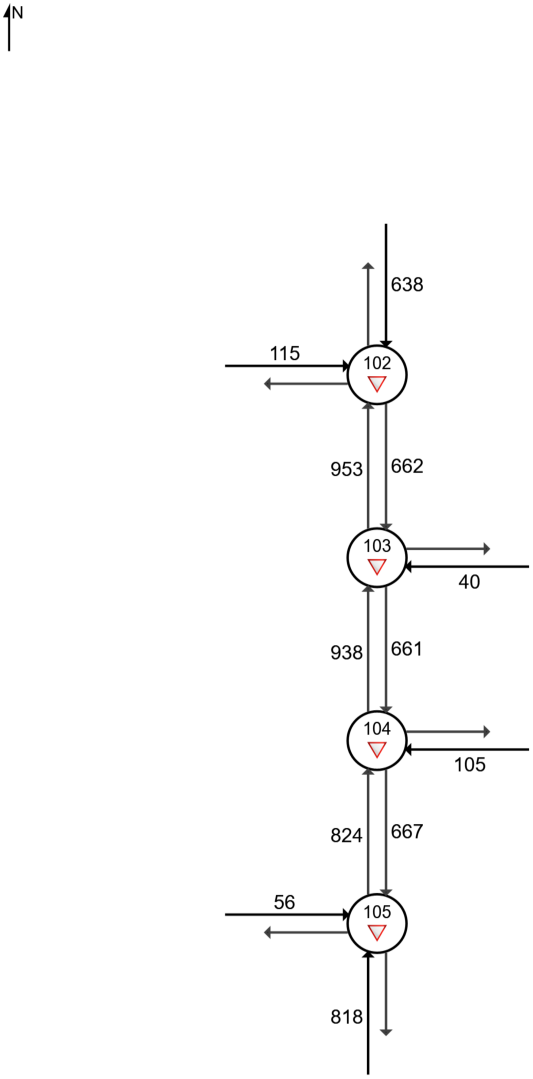
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

All Movement Classes



MOVEMENT SUMMARY

Site: 103 [Cockburn Road and Beach Street - AM 2020 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2020 AM Network (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
2	T1	All MCs	927	7.0	917	7.1	0.499	0.1	LOS A	0.1	0.8	0.02	0.03	0.04	59.5
3	R2	All MCs	11	0.0	10	0.0	0.499	15.8	LOS C	0.1	0.8	0.02	0.03	0.04	56.9
Approach			938	6.9	928	7.0	0.499	0.2	NA	0.1	0.8	0.02	0.03	0.04	59.4
East: Beach Street															
4	L2	All MCs	8	0.0	8	0.0	0.246	10.1	LOS B	0.3	2.0	0.89	0.98	0.98	31.5
6	R2	All MCs	32	0.0	32	0.0	0.246	32.5	LOS D	0.3	2.0	0.89	0.98	0.98	31.5
Approach			40	0.0	40	0.0	0.246	27.8	LOS D	0.3	2.0	0.89	0.98	0.98	31.5
North: Cockburn Road															
7	L2	All MCs	8	0.0	8	0.0	0.340	5.4	LOS A	0.0	0.0	0.00	0.01	0.00	55.6
8	T1	All MCs	654	7.0	632	7.2	0.340	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.0
Approach			662	6.9	641	7.1	0.340	0.1	NA	0.0	0.0	0.00	0.01	0.00	58.8
All Vehicles			1640	6.7	1608	6.9	0.499	0.9	NA	0.3	2.0	0.03	0.04	0.04	57.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Cockburn Road and Powell Street - AM 2020 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2020 AM Network (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
1	L2	All MCs	36	0.0	35	0.0	0.019	5.4	LOS A	0.0	0.0	0.00	0.58	0.00	32.3
2	T1	All MCs	917	7.0	907	7.1	0.482	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			953	6.7	943	6.8	0.482	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.0
North: Cockburn Road															
8	T1	All MCs	585	7.0	585	7.0	0.311	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	53	0.0	53	0.0	0.139	14.3	LOS B	0.2	1.3	0.77	0.90	0.77	34.7
Approach			638	6.4	638	6.4	0.311	1.3	NA	0.2	1.3	0.06	0.07	0.06	56.1
West: Powell Street															
10	L2	All MCs	38	0.0	38	0.0	0.106	8.6	LOS A	0.1	0.9	0.75	0.75	0.75	35.6
12	R2	All MCs	77	0.0	77	0.0	1.392	468.6	LOS F	6.8	47.8	1.00	3.41	5.37	0.5
Approach			115	0.0	115	0.0	1.392	316.7	LOS F	6.8	47.8	0.92	2.53	3.84	2.1
All Vehicles			1705	6.2	1695	6.2	1.392	22.0	NA	6.8	47.8	0.09	0.21	0.28	32.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 104 [Cockburn Road and Amity Boulevard - AM 2020 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2020 AM Network (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
2	T1	All MCs	808	7.0	808	7.0	0.429	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	All MCs	16	0.0	16	0.0	0.024	9.3	LOS A	0.0	0.2	0.56	0.72	0.56	44.2
Approach			824	6.9	824	6.9	0.429	0.3	NA	0.0	0.2	0.01	0.01	0.01	58.7
East: Amity Boulevard															
4	L2	All MCs	18	0.0	18	0.0	0.028	8.1	LOS A	0.0	0.3	0.53	0.70	0.53	41.0
6	R2	All MCs	87	0.0	87	0.0	1.134	246.6	LOS F	4.5	31.5	1.00	1.85	4.20	6.6
Approach			105	0.0	105	0.0	1.134	206.1	LOS F	4.5	31.5	0.92	1.65	3.58	7.6
North: Cockburn Road															
7	L2	All MCs	33	0.0	32	0.0	0.017	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.5
8	T1	All MCs	628	7.0	608	7.2	0.323	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			661	6.7	640	6.9	0.323	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.0
All Vehicles			1591	6.3	1569	6.4	1.134	14.1	NA	4.5	31.5	0.07	0.13	0.25	36.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 105 [Cockburn Road and Poore Grove - AM 2020 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2020 AM Network (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
1	L2	All MCs	48	0.0	48	0.0	0.026	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	50.6
2	T1	All MCs	769	7.0	769	7.0	0.408	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			818	6.6	818	6.6	0.408	0.5	NA	0.0	0.0	0.00	0.03	0.00	58.8
North: Cockburn Road															
8	T1	All MCs	627	0.0	608	0.0	0.309	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	40	7.0	39	7.2	0.089	12.8	LOS B	0.1	0.9	0.69	0.87	0.69	26.5
Approach			667	0.4	647	0.4	0.309	0.8	NA	0.1	0.9	0.04	0.05	0.04	57.0
West: Poore Grove															
10	L2	All MCs	55	0.0	55	0.0	0.114	7.9	LOS A	0.1	1.0	0.67	0.78	0.67	23.4
12	R2	All MCs	1	0.0	1	0.0	0.012	41.0	LOS E	0.0	0.1	0.92	0.95	0.92	26.0
Approach			56	0.0	56	0.0	0.114	8.5	LOS A	0.1	1.0	0.67	0.78	0.67	23.6
All Vehicles			1541	3.7	1521	3.7	0.408	0.9	NA	0.1	1.0	0.04	0.07	0.04	56.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [2020 PM Network (Network Folder: General)]

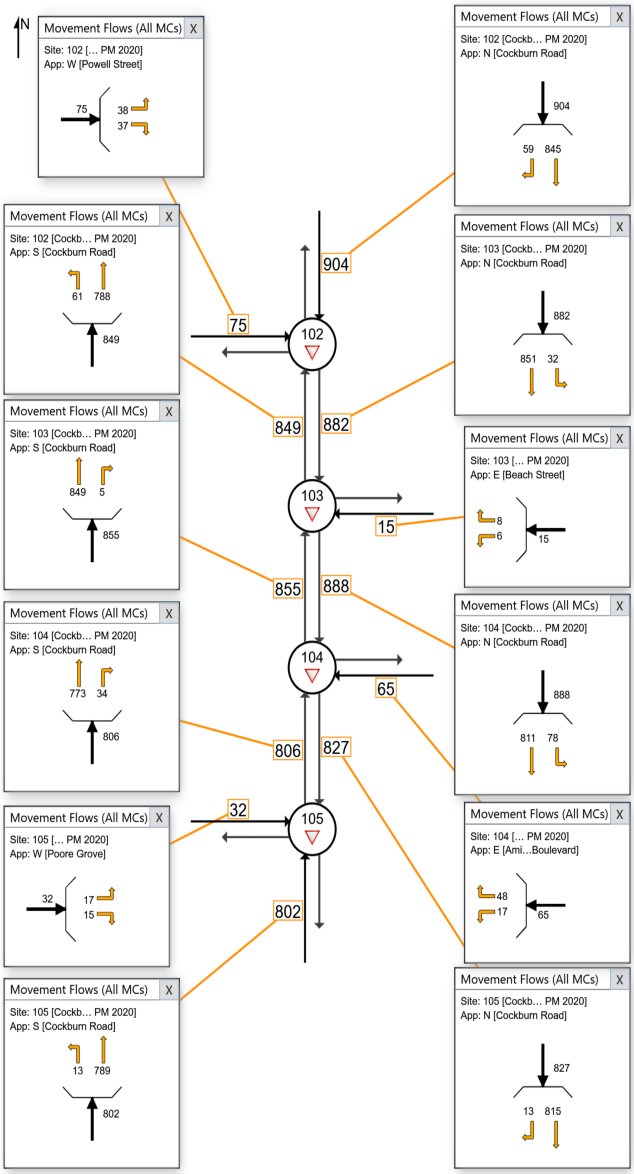
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes



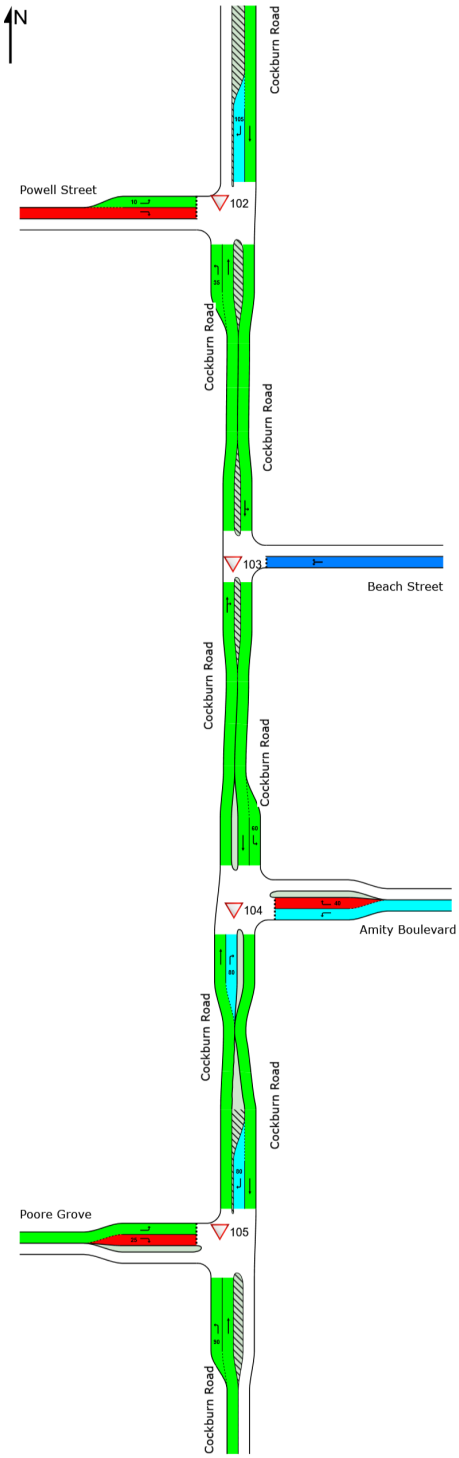
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2020 PM Network (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

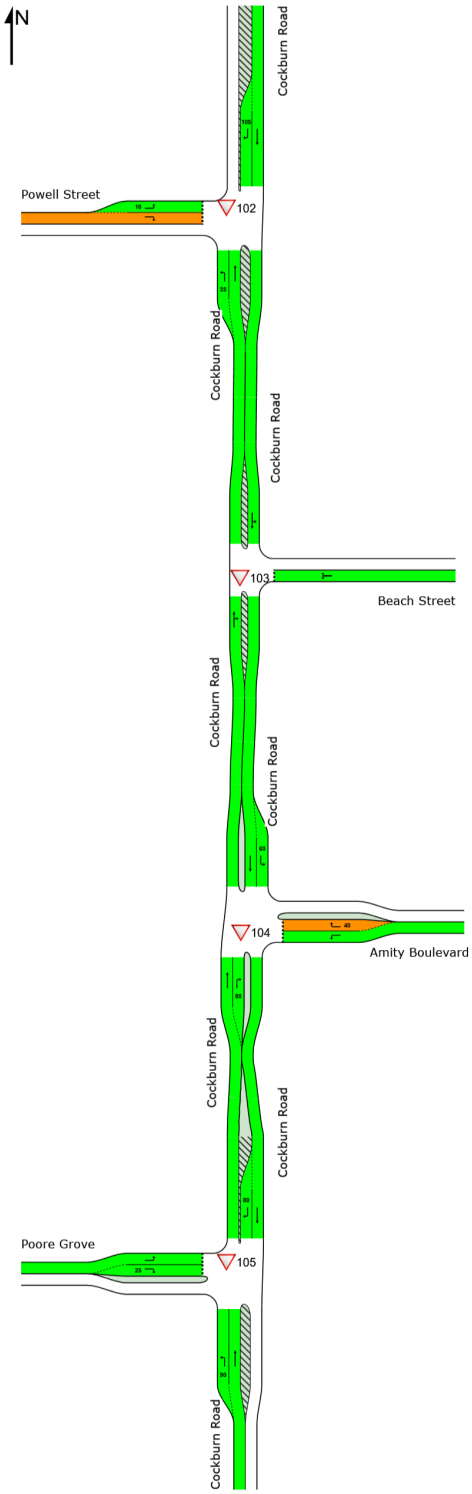
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [2020 PM Network (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

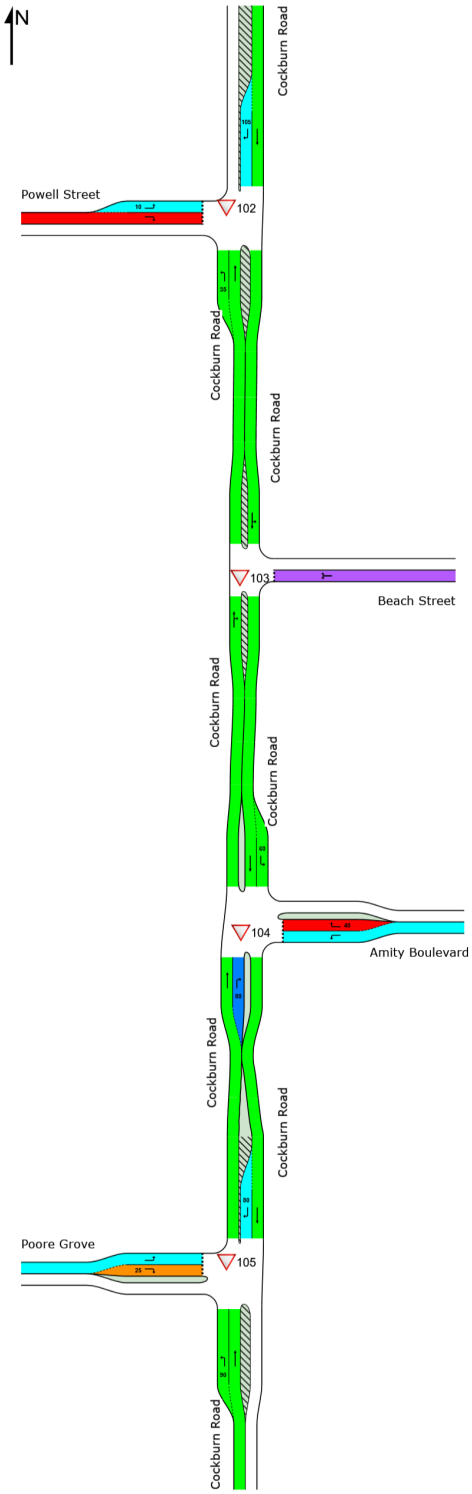
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [2020 PM Network (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Proportion Queued

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 0.99] [1.0]

MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [2020 PM Network (Network Folder: General)]

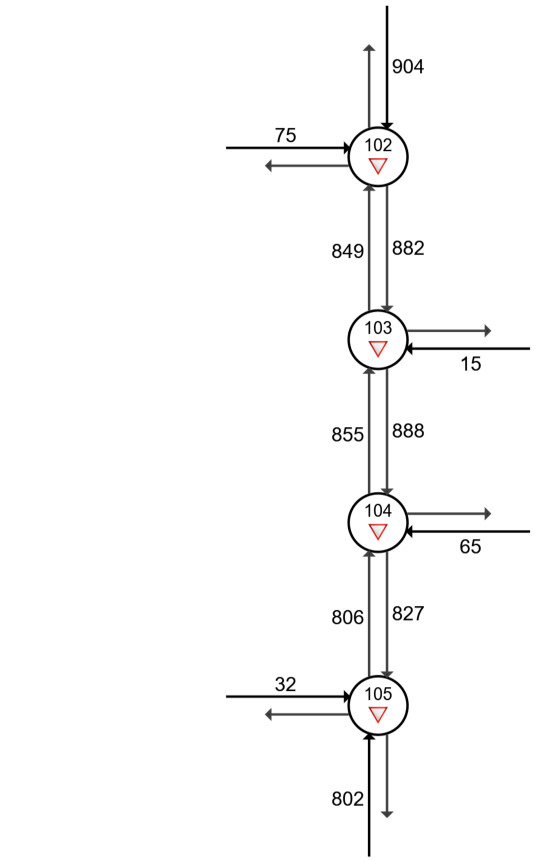
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

All Movement Classes



MOVEMENT SUMMARY

Site: 102 [Cockburn Road and Powell Street - PM 2020 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2020 PM Network (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
1	L2	All MCs	61	0.0	61	0.0	0.033	5.4	LOS A	0.0	0.0	0.00	0.58	0.00	32.3
2	T1	All MCs	788	7.0	788	7.0	0.418	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			849	6.5	849	6.5	0.418	0.4	NA	0.0	0.0	0.00	0.04	0.00	58.6
North: Cockburn Road															
8	T1	All MCs	845	7.0	845	7.0	0.449	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
9	R2	All MCs	59	0.0	59	0.0	0.126	12.3	LOS B	0.2	1.2	0.70	0.88	0.70	36.2
Approach			904	6.5	904	6.5	0.449	0.9	NA	0.2	1.2	0.05	0.06	0.05	57.0
West: Powell Street															
10	L2	All MCs	38	0.0	38	0.0	0.082	6.1	LOS A	0.1	0.7	0.67	0.67	0.67	37.6
12	R2	All MCs	37	0.0	37	0.0	0.904	210.3	LOS F	1.4	10.1	1.00	1.43	1.80	1.1
Approach			75	0.0	75	0.0	0.904	106.8	LOS F	1.4	10.1	0.83	1.05	1.23	7.3
All Vehicles			1828	6.3	1828	6.3	0.904	5.0	NA	1.4	10.1	0.06	0.09	0.07	49.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 103 [Cockburn Road and Beach Street - PM 2020 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2020 PM Network (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
2	T1	All MCs	849	7.0	849	7.0	0.460	0.1	LOS A	0.1	0.6	0.02	0.02	0.03	59.5
3	R2	All MCs	5	0.0	5	0.0	0.460	23.5	LOS C	0.1	0.6	0.02	0.02	0.03	57.0
Approach			855	7.0	855	7.0	0.460	0.2	NA	0.1	0.6	0.02	0.02	0.03	59.5
East: Beach Street															
4	L2	All MCs	6	0.0	6	0.0	0.089	10.6	LOS B	0.1	0.7	0.87	0.95	0.87	33.2
6	R2	All MCs	8	0.0	8	0.0	0.089	35.7	LOS E	0.1	0.7	0.87	0.95	0.87	33.2
Approach			15	0.0	15	0.0	0.089	24.9	LOS C	0.1	0.7	0.87	0.95	0.87	33.2
North: Cockburn Road															
7	L2	All MCs	32	0.0	32	0.0	0.468	5.4	LOS A	0.0	0.0	0.00	0.02	0.00	55.3
8	T1	All MCs	851	7.0	851	7.0	0.468	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	57.6
Approach			882	6.7	882	6.7	0.468	0.2	NA	0.0	0.0	0.00	0.02	0.00	57.1
All Vehicles			1752	6.8	1752	6.8	0.468	0.4	NA	0.1	0.7	0.02	0.03	0.02	58.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 104 [Cockburn Road and Amity Boulevard - PM 2020 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2020 PM Network (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
2	T1	All MCs	773	7.0	773	7.0	0.410	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	All MCs	34	0.0	34	0.0	0.077	12.7	LOS B	0.1	0.7	0.71	0.88	0.71	42.0
Approach			806	6.7	806	6.7	0.410	0.6	NA	0.1	0.7	0.03	0.04	0.03	57.2
East: Amity Boulevard															
4	L2	All MCs	17	0.0	17	0.0	0.038	10.9	LOS B	0.0	0.3	0.68	0.85	0.68	38.7
6	R2	All MCs	48	0.0	48	0.0	0.988	221.8	LOS F	2.0	14.2	1.00	1.34	2.32	7.2
Approach			65	0.0	65	0.0	0.988	167.3	LOS F	2.0	14.2	0.92	1.21	1.89	9.1
North: Cockburn Road															
7	L2	All MCs	78	0.0	78	0.0	0.042	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.5
8	T1	All MCs	811	7.0	811	7.0	0.430	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			888	6.4	888	6.4	0.430	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.3
All Vehicles			1760	6.3	1760	6.3	0.988	6.8	NA	2.0	14.2	0.05	0.09	0.08	46.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 105 [Cockburn Road and Poore Grove - PM 2020 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2020 PM Network (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
1	L2	All MCs	13	0.0	13	0.0	0.007	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	50.6
2	T1	All MCs	789	7.0	789	7.0	0.419	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			802	6.9	802	6.9	0.419	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.5
North: Cockburn Road															
8	T1	All MCs	815	7.0	815	7.0	0.432	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
9	R2	All MCs	13	0.0	13	0.0	0.026	11.5	LOS B	0.0	0.2	0.66	0.81	0.66	27.0
Approach			827	6.9	827	6.9	0.432	0.3	NA	0.0	0.2	0.01	0.01	0.01	59.0
West: Poore Grove															
10	L2	All MCs	17	0.0	17	0.0	0.036	7.9	LOS A	0.0	0.3	0.66	0.76	0.66	23.4
12	R2	All MCs	15	0.0	15	0.0	0.282	78.6	LOS F	0.3	2.3	0.97	1.01	1.04	19.0
Approach			32	0.0	32	0.0	0.282	40.9	LOS E	0.3	2.3	0.80	0.87	0.84	20.0
All Vehicles			1661	6.8	1661	6.8	0.432	1.0	NA	0.3	2.3	0.02	0.03	0.02	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [2024 Saturday AM (Network Folder: General)]

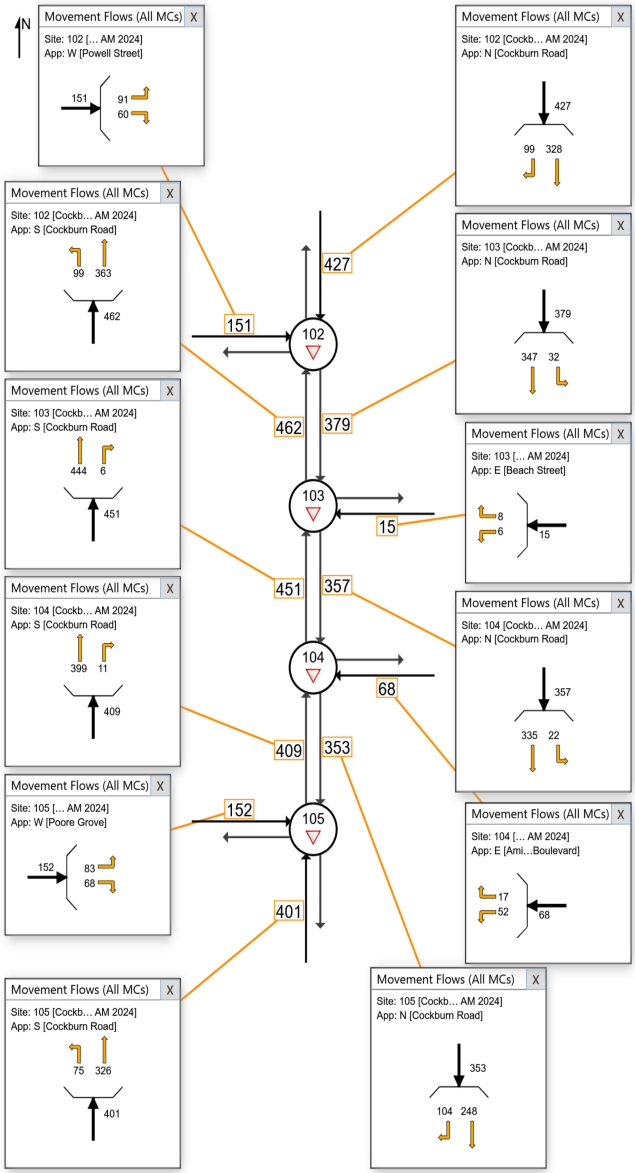
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes



MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [2024 Saturday PM (Network Folder: General)]

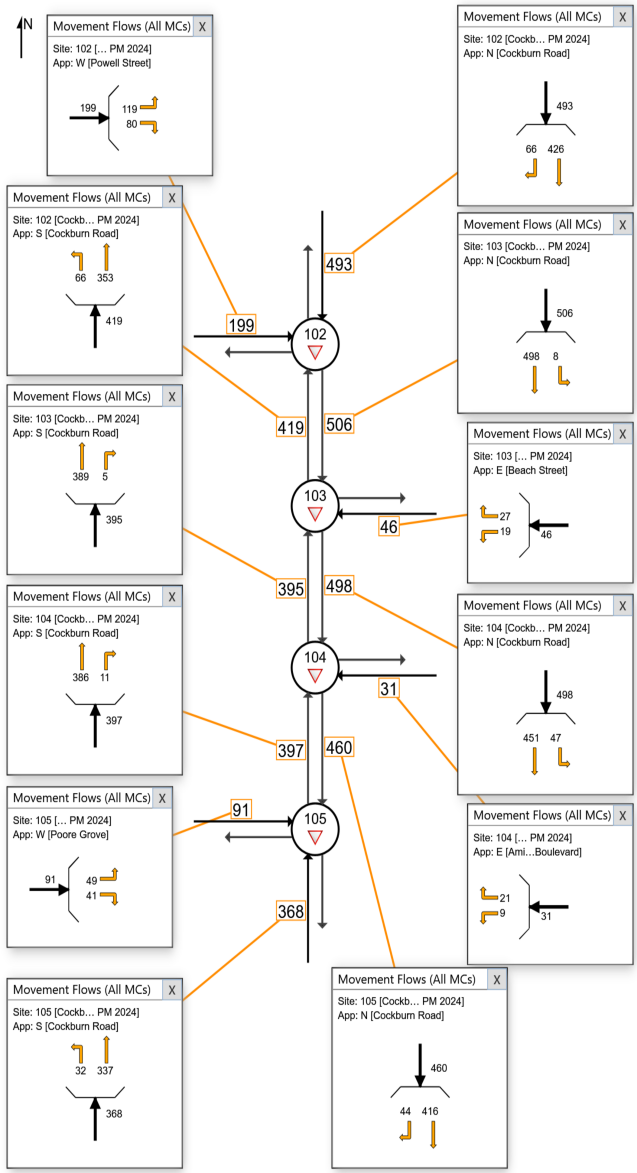
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes



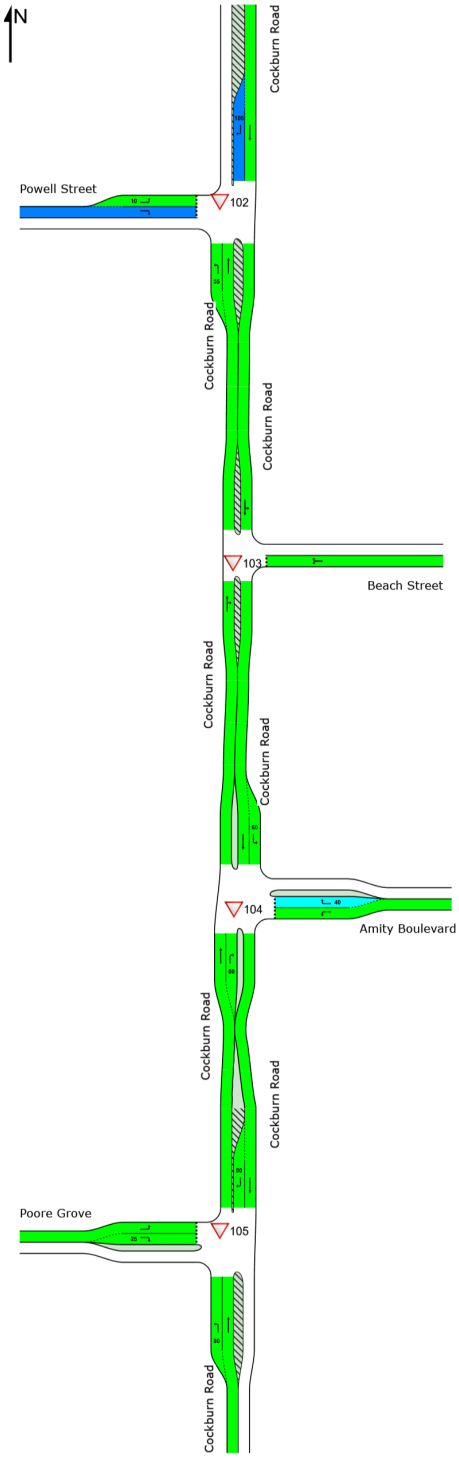
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2024 Saturday AM (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

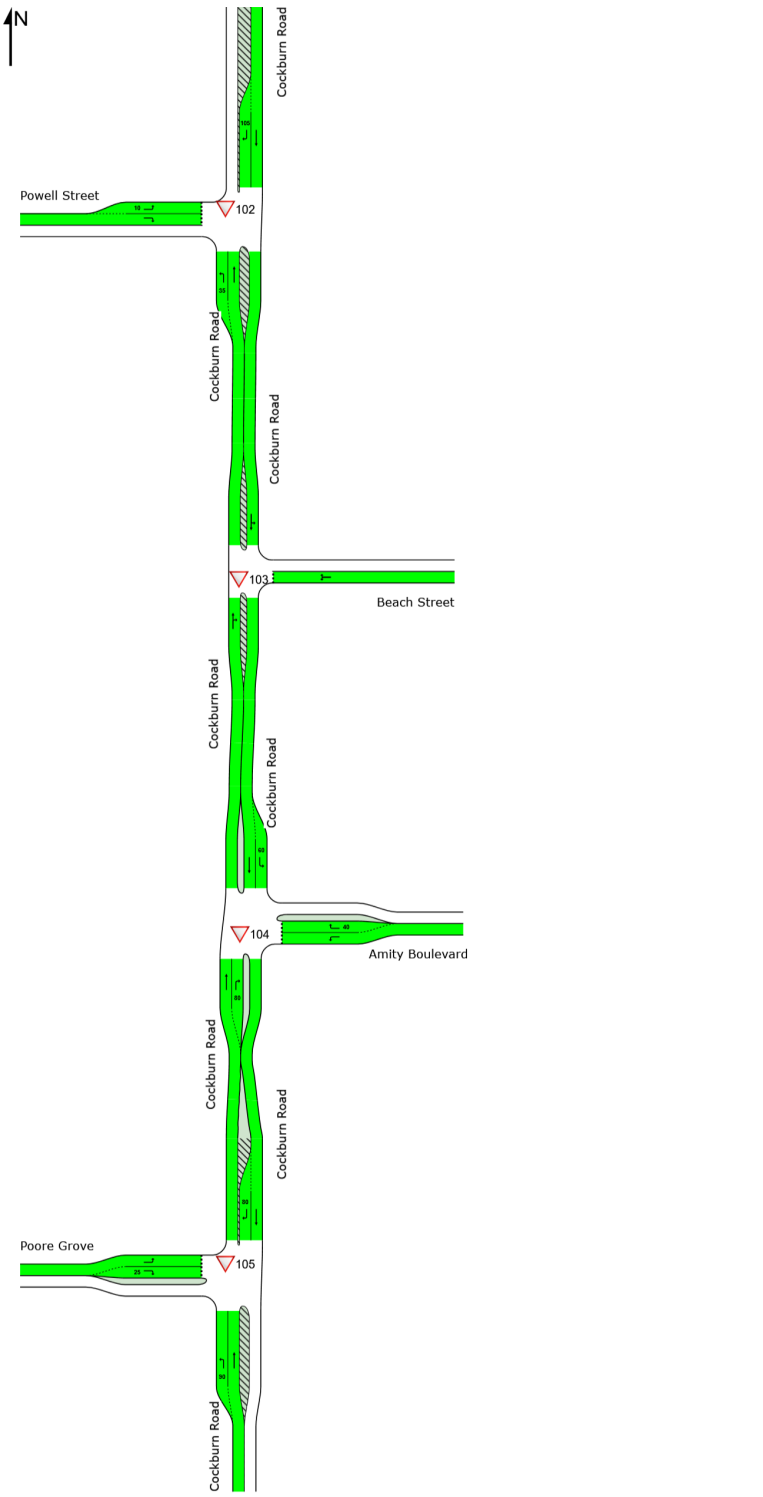
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [2024 Saturday AM (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

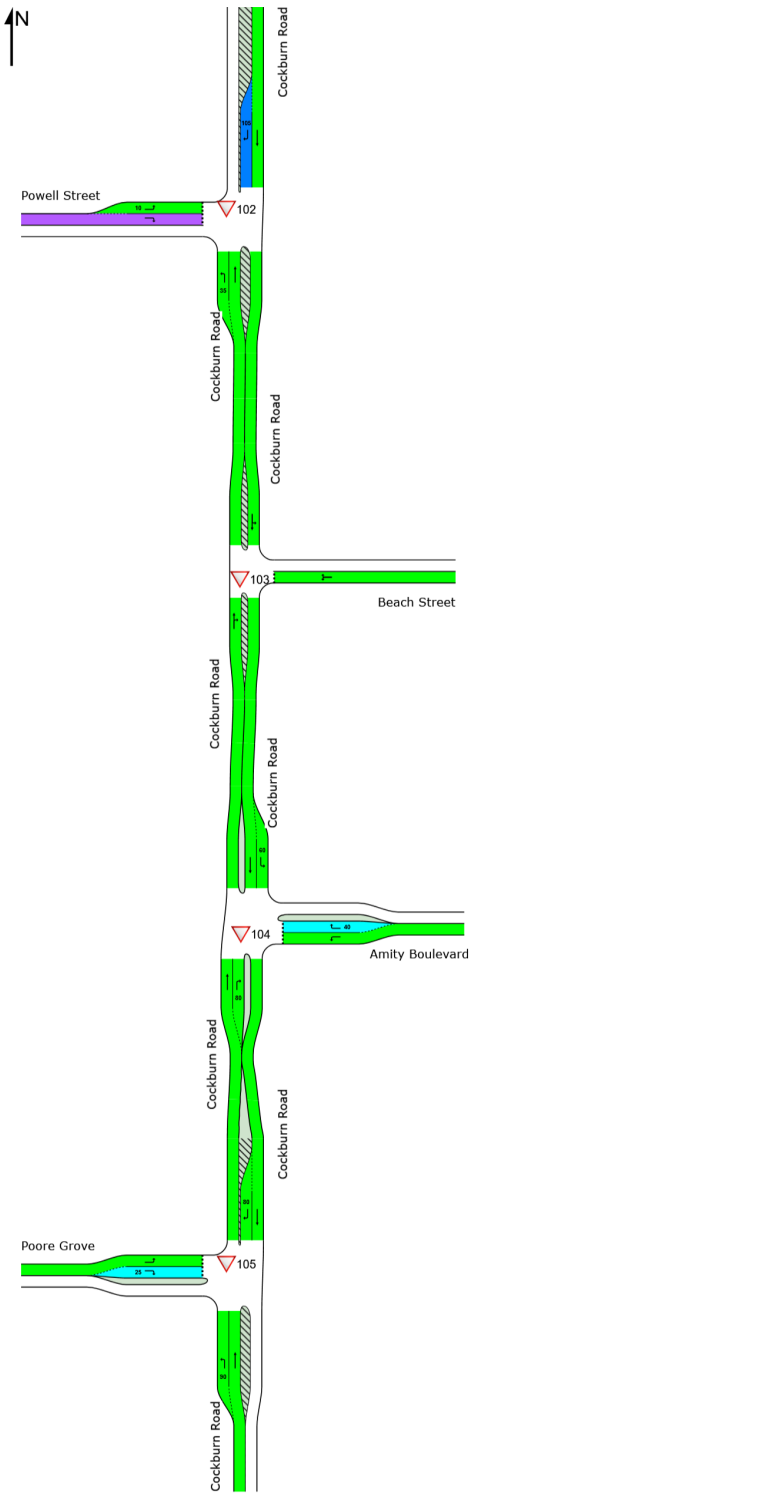
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [2024 Saturday AM (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Proportion Queued

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 0.99]	[1.0]

MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [2024 Saturday AM (Network Folder: General)]

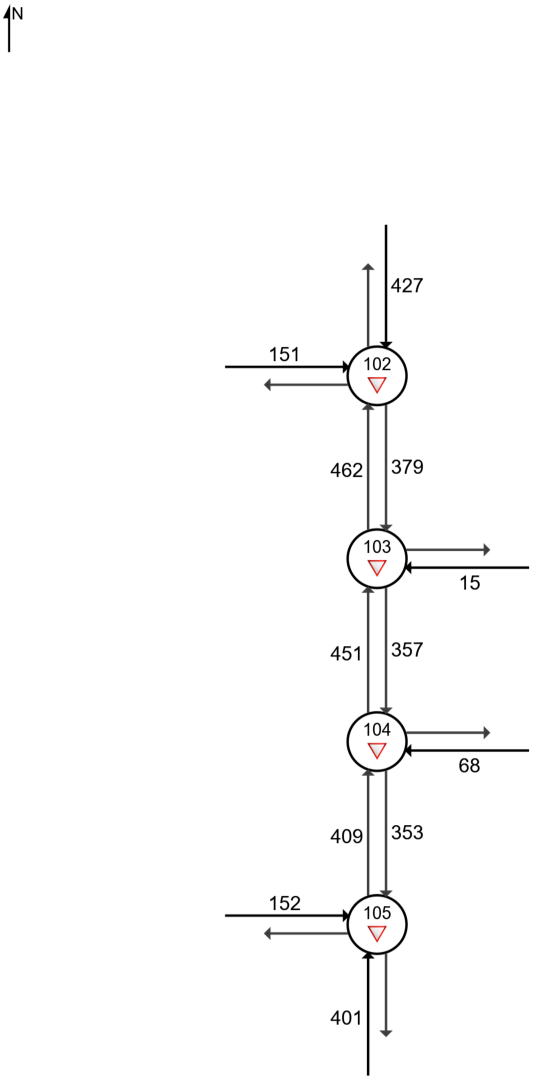
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

All Movement Classes



MOVEMENT SUMMARY

Site: 102 [Cockburn Road and Powell Street - Sat AM 2024 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2024 Saturday AM (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
1	L2	All MCs	99	0.0	99	0.0	0.053	5.4	LOS A	0.0	0.0	0.00	0.58	0.00	32.3
2	T1	All MCs	363	7.0	363	7.0	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			462	5.5	462	5.5	0.193	1.2	NA	0.0	0.0	0.00	0.12	0.00	56.2
North: Cockburn Road															
8	T1	All MCs	328	7.0	328	7.0	0.174	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	99	0.0	99	0.0	0.225	15.2	LOS C	0.5	3.5	0.76	0.83	0.76	34.1
Approach			427	5.4	427	5.4	0.225	3.5	NA	0.5	3.5	0.18	0.19	0.18	50.3
West: Powell Street															
10	L2	All MCs	91	0.0	91	0.0	0.130	1.9	LOS A	0.1	0.9	0.35	0.31	0.35	31.5
12	R2	All MCs	60	0.0	60	0.0	0.300	19.0	LOS C	0.4	3.0	0.82	0.96	0.96	5.6
Approach			151	0.0	151	0.0	0.300	8.7	LOS A	0.4	3.0	0.54	0.57	0.59	22.5
All Vehicles			1040	4.7	1040	4.7	0.300	3.2	NA	0.5	3.5	0.15	0.22	0.16	46.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 103 [Cockburn Road and Beach Street - Sat AM 2024 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2024 Saturday AM (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
2	T1	All MCs	444	7.0	444	7.0	0.241	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	59.6
3	R2	All MCs	6	0.0	6	0.0	0.241	7.9	LOS A	0.0	0.2	0.02	0.02	0.02	57.0
Approach			451	6.9	451	6.9	0.241	0.1	NA	0.0	0.2	0.02	0.02	0.02	59.6
East: Beach Street															
4	L2	All MCs	6	0.0	6	0.0	0.021	6.7	LOS A	0.0	0.2	0.50	0.67	0.50	46.9
6	R2	All MCs	8	0.0	8	0.0	0.021	10.0	LOS B	0.0	0.2	0.50	0.67	0.50	46.9
Approach			15	0.0	15	0.0	0.021	8.6	LOS A	0.0	0.2	0.50	0.67	0.50	46.9
North: Cockburn Road															
7	L2	All MCs	32	0.0	32	0.0	0.201	5.4	LOS A	0.0	0.0	0.00	0.05	0.00	55.1
8	T1	All MCs	347	7.0	347	7.0	0.201	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	55.3
Approach			379	6.4	379	6.4	0.201	0.5	NA	0.0	0.0	0.00	0.05	0.00	55.2
All Vehicles			844	6.6	844	6.6	0.241	0.4	NA	0.0	0.2	0.02	0.04	0.02	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 104 [Cockburn Road and Amity Boulevard - Sat AM 2024 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2024 Saturday AM (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
2	T1	All MCs	399	7.0	399	7.0	0.212	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	11	0.0	11	0.0	0.011	7.0	LOS A	0.0	0.1	0.41	0.58	0.41	45.7
Approach			409	6.8	409	6.8	0.212	0.2	NA	0.0	0.1	0.01	0.01	0.01	58.7
East: Amity Boulevard															
4	L2	All MCs	52	0.0	52	0.0	0.054	6.0	LOS A	0.1	0.5	0.39	0.60	0.39	42.9
6	R2	All MCs	17	0.0	17	0.0	0.046	12.7	LOS B	0.1	0.4	0.67	0.83	0.67	37.3
Approach			68	0.0	68	0.0	0.054	7.7	LOS A	0.1	0.5	0.46	0.66	0.46	41.4
North: Cockburn Road															
7	L2	All MCs	22	0.0	22	0.0	0.012	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.5
8	T1	All MCs	335	0.0	335	0.0	0.170	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			357	0.0	357	0.0	0.170	0.4	NA	0.0	0.0	0.00	0.04	0.00	58.9
All Vehicles			835	3.3	835	3.3	0.212	0.9	NA	0.1	0.5	0.04	0.08	0.04	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 105 [Cockburn Road and Poore Grove - Sat AM 2024 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2024 Saturday AM (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
1	L2	All MCs	75	0.0	75	0.0	0.040	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	50.6
2	T1	All MCs	326	7.0	326	7.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			401	5.7	401	5.7	0.173	1.1	NA	0.0	0.0	0.00	0.11	0.00	57.3
North: Cockburn Road															
8	T1	All MCs	248	7.0	248	7.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	104	0.0	104	0.0	0.111	7.6	LOS A	0.2	1.2	0.46	0.68	0.46	28.6
Approach			353	4.9	353	4.9	0.132	2.3	NA	0.2	1.2	0.14	0.20	0.14	48.6
West: Poore Grove															
10	L2	All MCs	83	0.0	83	0.0	0.088	3.5	LOS A	0.1	0.9	0.40	0.49	0.40	26.6
12	R2	All MCs	68	0.0	68	0.0	0.173	9.8	LOS A	0.3	1.8	0.68	0.78	0.68	37.5
Approach			152	0.0	152	0.0	0.173	6.3	LOS A	0.3	1.8	0.52	0.62	0.52	33.7
All Vehicles			905	4.4	905	4.4	0.173	2.4	NA	0.3	1.8	0.14	0.23	0.14	48.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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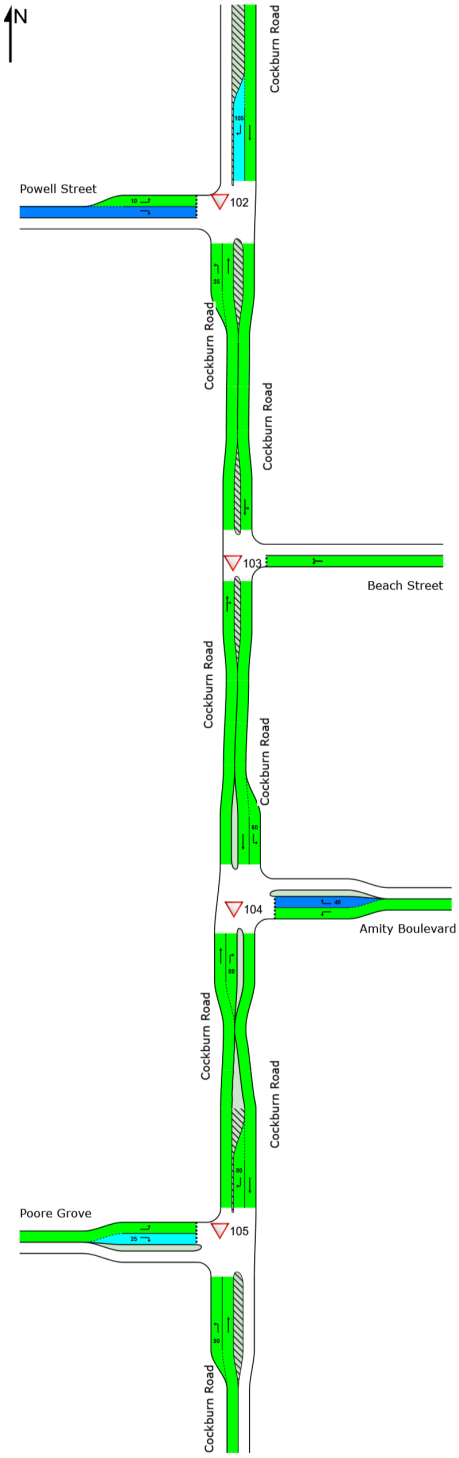
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [2024 Saturday PM (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

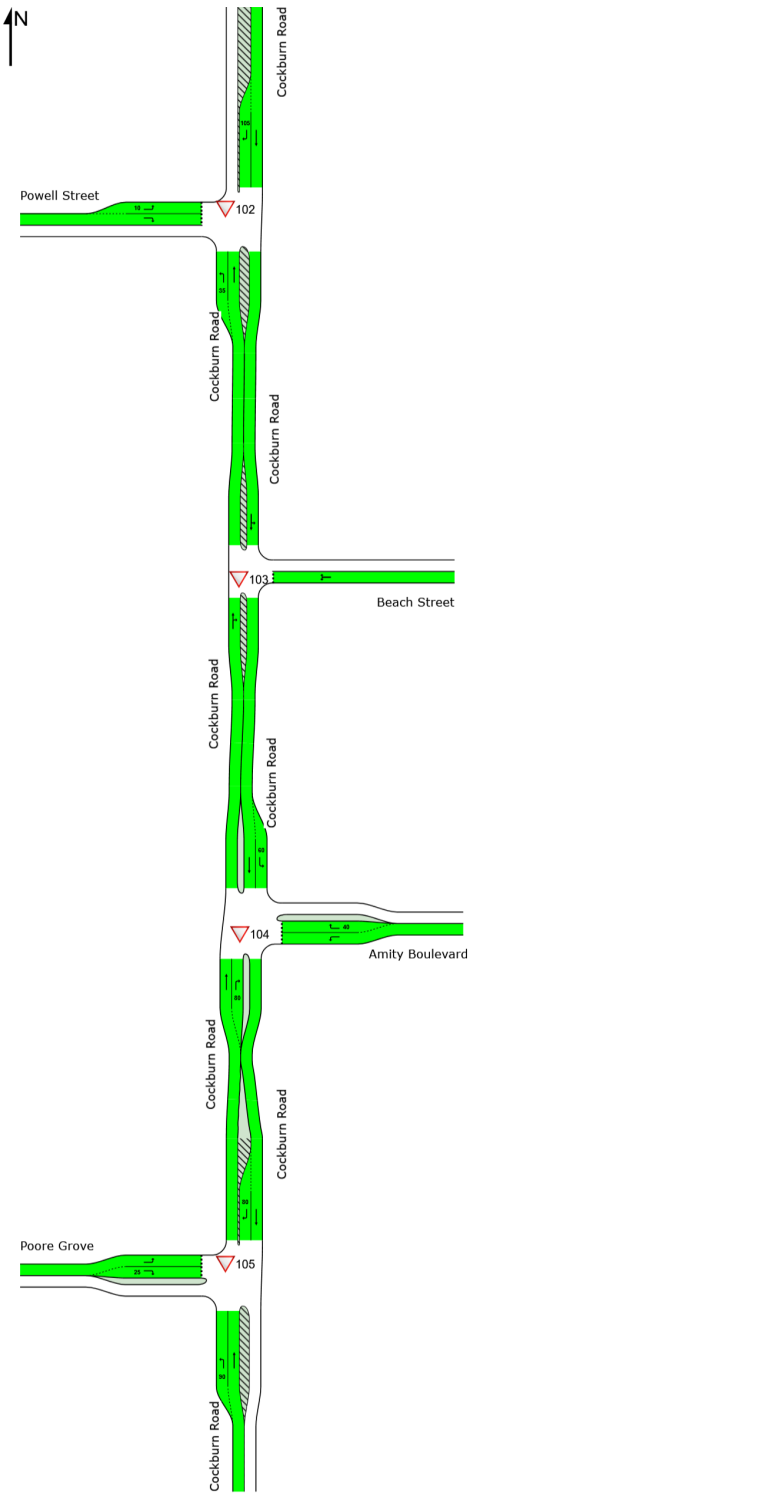
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [2024 Saturday PM (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

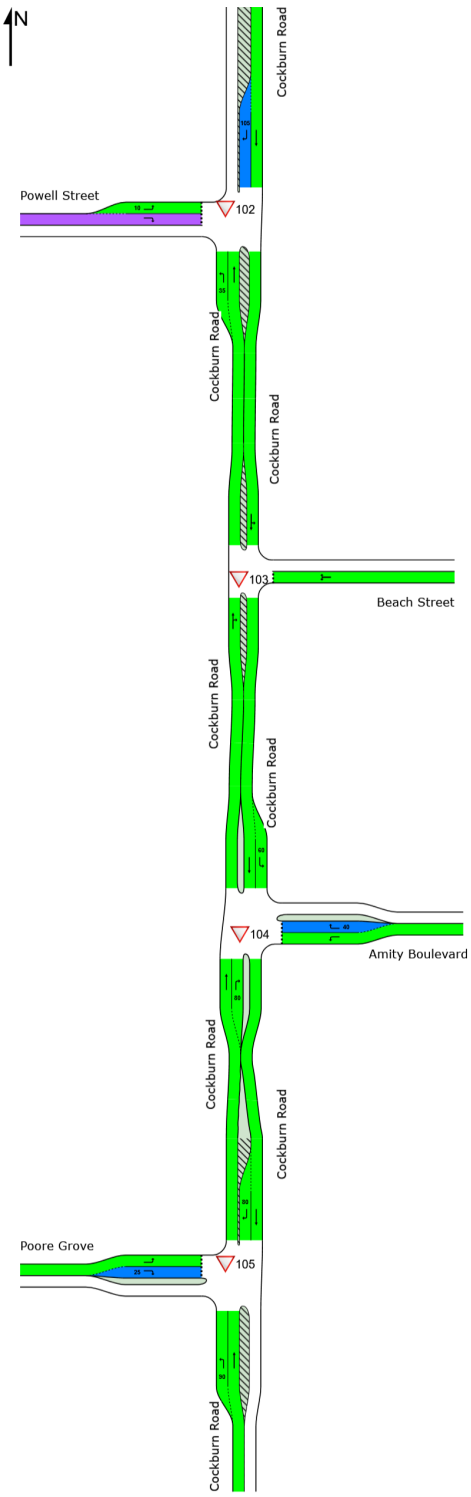
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [2024 Saturday PM (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Proportion Queued

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 0.99]	[1.0]

MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [2024 Saturday PM (Network Folder: General)]

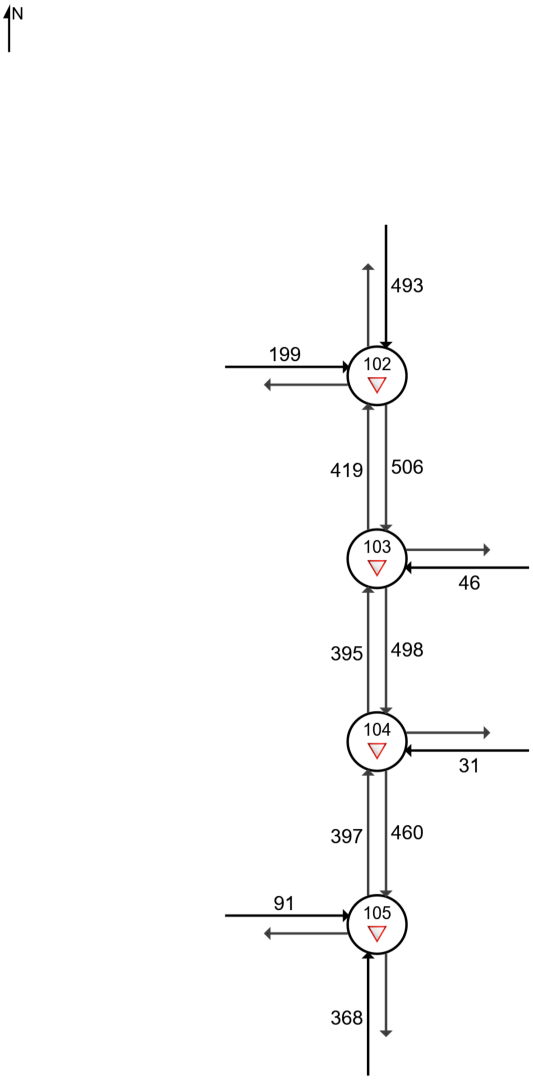
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

All Movement Classes



MOVEMENT SUMMARY

Site: 102 [Cockburn Road and Powell Street - Sat PM 2024 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2024 Saturday PM (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
1	L2	All MCs	66	0.0	66	0.0	0.035	5.4	LOS A	0.0	0.0	0.00	0.58	0.00	32.3
2	T1	All MCs	353	7.0	353	7.0	0.187	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			419	5.9	419	5.9	0.187	0.9	NA	0.0	0.0	0.00	0.09	0.00	57.3
North: Cockburn Road															
8	T1	All MCs	426	7.0	426	7.0	0.226	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	66	0.0	66	0.0	0.136	13.5	LOS B	0.3	2.1	0.72	0.79	0.72	35.3
Approach			493	6.1	493	6.1	0.226	1.9	NA	0.3	2.1	0.10	0.11	0.10	54.3
West: Powell Street															
10	L2	All MCs	119	0.0	119	0.0	0.169	1.9	LOS A	0.2	1.2	0.35	0.31	0.35	31.5
12	R2	All MCs	80	0.0	80	0.0	0.441	24.5	LOS C	0.7	4.8	0.87	1.16	1.16	5.0
Approach			199	0.0	199	0.0	0.441	11.0	LOS B	0.7	4.8	0.56	0.66	0.68	21.4
All Vehicles			1111	4.9	1111	4.9	0.441	3.1	NA	0.7	4.8	0.14	0.20	0.16	45.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 103 [Cockburn Road and Beach Street - Sat PM 2024 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2024 Saturday PM (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
2	T1	All MCs	389	7.0	389	7.0	0.212	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	59.6
3	R2	All MCs	5	0.0	5	0.0	0.212	10.4	LOS B	0.0	0.2	0.02	0.02	0.02	57.0
Approach			395	6.9	395	6.9	0.212	0.1	NA	0.0	0.2	0.02	0.02	0.02	59.6
East: Beach Street															
4	L2	All MCs	19	0.0	19	0.0	0.077	7.6	LOS A	0.1	0.7	0.56	0.79	0.56	45.6
6	R2	All MCs	27	0.0	27	0.0	0.077	11.2	LOS B	0.1	0.7	0.56	0.79	0.56	45.6
Approach			46	0.0	46	0.0	0.077	9.7	LOS A	0.1	0.7	0.56	0.79	0.56	45.6
North: Cockburn Road															
7	L2	All MCs	8	0.0	8	0.0	0.269	5.4	LOS A	0.0	0.0	0.00	0.01	0.00	55.6
8	T1	All MCs	498	7.0	498	7.0	0.269	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	58.9
Approach			506	6.9	506	6.9	0.269	0.1	NA	0.0	0.0	0.00	0.01	0.00	58.5
All Vehicles			947	6.6	947	6.6	0.269	0.6	NA	0.1	0.7	0.04	0.05	0.04	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 104 [Cockburn Road and Amity Boulevard - Sat PM 2024 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2024 Saturday PM (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
2	T1	All MCs	386	7.0	386	7.0	0.205	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	11	0.0	11	0.0	0.013	7.9	LOS A	0.0	0.1	0.48	0.63	0.48	45.2
Approach			397	6.8	397	6.8	0.205	0.2	NA	0.0	0.1	0.01	0.02	0.01	58.6
East: Amity Boulevard															
4	L2	All MCs	9	0.0	9	0.0	0.011	6.6	LOS A	0.0	0.1	0.44	0.60	0.44	42.4
6	R2	All MCs	21	0.0	21	0.0	0.070	15.2	LOS C	0.1	0.7	0.74	0.87	0.74	35.5
Approach			31	0.0	31	0.0	0.070	12.5	LOS B	0.1	0.7	0.65	0.79	0.65	37.4
North: Cockburn Road															
7	L2	All MCs	47	0.0	47	0.0	0.025	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	52.5
8	T1	All MCs	451	0.0	451	0.0	0.229	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			498	0.0	498	0.0	0.229	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.4
All Vehicles			925	2.9	925	2.9	0.229	0.8	NA	0.1	0.7	0.03	0.06	0.03	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 105 [Cockburn Road and Poore Grove - Sat PM 2024 (Site Folder: Coogee Master Plan)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [2024 Saturday PM (Network Folder: General)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Cockburn Road															
1	L2	All MCs	32	0.0	32	0.0	0.017	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	50.6
2	T1	All MCs	337	7.0	337	7.0	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			368	6.4	368	6.4	0.179	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.6
North: Cockburn Road															
8	T1	All MCs	416	7.0	416	7.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	44	0.0	44	0.0	0.045	7.3	LOS A	0.1	0.5	0.43	0.64	0.43	28.7
Approach			460	6.3	460	6.3	0.221	0.7	NA	0.1	0.5	0.04	0.06	0.04	56.0
West: Poore Grove															
10	L2	All MCs	49	0.0	49	0.0	0.053	3.5	LOS A	0.1	0.5	0.39	0.48	0.39	26.6
12	R2	All MCs	41	0.0	41	0.0	0.125	11.7	LOS B	0.2	1.2	0.73	0.81	0.73	36.5
Approach			91	0.0	91	0.0	0.125	7.2	LOS A	0.2	1.2	0.54	0.63	0.54	33.1
All Vehicles			919	5.7	919	5.7	0.221	1.3	NA	0.2	1.2	0.07	0.11	0.07	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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